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**SPECIAL ISSUE
ON
HEALTH, PHYSICAL ACTIVITY AND
AGING**

Gregory S. Kolt

K.L. Sharma

&
Narender K. Chadha
Guest Editors

Editor

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EDITORIAL

Health and physical activity in the globally aging population

Significant shifts are evident in both population aging and the prevalence of non-communicable lifestyle diseases. The impact of such changes on society is becoming dramatic. The growing obesity problem, declining levels of physical activity, and increased prevalence of coronary heart disease and type 2 diabetes are just a few of the health issues that are requiring immediate attention from governments and health care systems across both developed and developing countries. It is argued that the advent of technology, the increasing abundance of fast food outlets, and the increased westernisation of many countries around the world are the main contributors to these health issues. Whatever the cause, it appears that slowing down the accelerating nature of these problems is becoming more and more difficult.

A growing literature in the areas of physical activity and health has been evident over the past two decades. This literature has progressed from epidemiological studies to those that examine the efficacy of a wide range of interventions. The findings from such literature are paramount in addressing the health problems of older adults, and it is this literature that must inform government decision making.

Despite declining physical activity rates, ironically it was an early morning walk through a park in suburban New Delhi that triggered the idea of a Special Issue of the *Indian Journal of Gerontology* on the topic of Health, Physical Activity, and Aging. We marvelled at the many hundreds of people that were active as the sun was rising, engaging in walking, jogging, cricket, yoga, and a variety of other active games. The population was well represented: there were males, females, children, teenagers, adults, and the elderly all challenging themselves with physically active pursuits. It was this event that

triggered the idea of a collection of papers that addressed health and physical activity in the ageing population.

In this Special Issue we have assembled a large group of researchers, health professionals, and other practitioners from India, New Zealand, the United States, Singapore, Botswana, Australia, and the United Kingdom to contribute papers around the theme of Health, Physical Activity, and Aging. This theme was left intentionally broad to demonstrate the variety of activities that older people engage in that can provide health benefits, and the variety of research and practice that is evident in all regions of the world.

The issue leads with three papers focussed on physical activity as it relates to health. Melody Oliver and colleagues discuss important issues for planning and conducting physical activity interventions and research with older adults. They use as examples a randomised controlled trial of telephone counselling to improve physical activity in sedentary older adults, and a cross-sectional study of physical activity and body size in older Asian Indians. Jyotsna Kalavar and D. Jamuna report on their study that examined the health status and physical activities of older residents of “pay and stay” homes in south India. They also explored the barriers to physical activity in the residents of these homes, concluding that the physical environment itself was the main barrier to engagement in physical activity. Akpovire Oduaran and E. O. Owolabi contribute a paper that examines physical activity and ageing within the context of HIV/AIDS in Botswana. They report that ageing in this African nation is jeopardised by HIV/AIDS, and they discuss the role that physical activity may play in mitigating the impact of this disease.

Two papers in this issue focus on leisure issues in the ageing population. Megan Janke and Adam Davey examine the evidence for selective optimisation with compensation in three domains of leisure (informal, formal, and activity). They found that older adults are able to maintain informal leisure patterns despite changes in disability, and that disability may prevent the buffering effects for the physical forms of leisure. An important implication of this research is that helping older adults to maintain participation in formal leisure activities may promote well-being in later life. Leng Leng Thang, through case studies of activity centres for older people in Singapore, investigated the role of karaoke singing in ageing within the framework of activity

in later life. It was concluded that karaoke plays an important role in promoting social support, providing links with younger generations, and in promoting learning and development beneficial to the health of older people.

Grant Schofield and his colleagues investigated perceived and real body fatness in older Asian Indians living in urban India and in New Zealand. They found a high prevalence of overweight and obesity, and interestingly, that the majority of overweight or obese people perceived themselves to be of normal weight. They discuss their findings in relation to implications for effective weight management programs. In a paper on healthy ageing, Elaine Rush discusses the possible aetiology of disease (especially cardiovascular disease and type 2 diabetes) from an environment and gene perspective with reference to a migrant Asian Indian population in New Zealand. She also examines the opportunities for reduction of disease throughout the life cycle.

Two papers are included on healthy ageing. The first by Sally Newman and Catherine Tompkins explores the concepts behind activity theory and continuity theory as they relate to healthy ageing and independence. A case study is used to illustrate the concept of “life competencies” in relation to ageing well. In the second paper on the theme of healthy ageing Donna Butts discusses intergenerational strategies and programs that contribute to health behaviours and healthy ageing. She concludes that older adults engaged in interactions with children and youth appear to maintain their own health to a higher degree than those who do not. Such interactions at the same time teach young people healthy habits early in life.

Two further papers round off this Special Issue. The paper by Narender Chadha and his colleagues examines the relationship between physical activities in everyday life and marital status, educational level, and socioeconomic status. They demonstrate that positive correlations exist between these variables. In the final paper of this issue Ruth DeSouza identifies the gaps in current health research and practices for Asian Indians living in New Zealand. She discusses the importance of cultural safety and the development of a health workforce to work with Asian Indian and other migrants, to health policy and research.

We hope you enjoy reading this Special Issue of the *Indian Journal of Gerontology*, and encourage you to take the challenge to improve the health of older people through the various methods and contexts provided in these papers.

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Physical Activity Research and Interventions with Older Adults: Perspectives and Issues

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ABSTRACT

The population is ageing worldwide. Concurrently, diseases related to insufficient physical activity such as cardiovascular disease and Type 2 diabetes mellitus are increasing. Participation in regular, moderate intensity physical activity is related to a multitude of physical and psychological health benefits in older adults. Despite this, older adults are a population at risk of insufficient activity. Therefore, effective intervention is essential to increase physical activity participation in the elderly. Elements related to intervention success with older adult populations have been reported extensively, however, limited information on the practical design and implementation of interventions and research is available. The current paper considers important issues for planning and conducting physical activity interventions and research with older adults. Considerations such as health status, participant safety, and physician involvement are discussed.

Keywords: Physical activity, Older adults, Elderly, Intervention

Globally the population is ageing. The proportion of people aged 60 years or older is estimated to double from ten percent of the world population in 2002, to approximately twenty percent in 2050 (United Nations Population Division, 2002). Older age is associated with disproportionate utilisation of healthcare services and expenditure (Meara, White, and Cutler, 2004; Ministry of Health, 1999; Yang, Norton, and Stearns, 2003), however, this may be mitigated somewhat by improving the health status of older adults (Lubitz, Cai, Kramarow,

and Lentzner, 2003). Physical activity participation is considered an ideal method by which to achieve this. A substantial body of evidence exists for the physical and psychological health benefits that physical activity may confer to the older adult. For example, regular participation in moderate physical activity (such as walking) is associated with a reduced risk of falling (Sherrington, Lord, and Finch, 2004), as well as reduced incidence (or symptoms of) of colon and breast cancer (Thune and Furberg, 2001), cardiovascular disease (Rastogi *et al.*, 2004), type 2 diabetes mellitus (Mohan, Gokulakrishnan, Deepa, Shanthirani, and Datta, 2005), and obesity (Bauman, 2004). Recent research in the US has also shown that older men and women who are more physically active are less likely to experience cognitive decline (Abbott *et al.*, 2004; Mazzeo *et al.*, 1998; McAuley, Marquez, Jerome, Blissmer, and Katula, 2002; Weuve *et al.*, 2004; Yaffe, Barnes, Nevitt, Lui, and Covinsky, 2001). Quality of life may also be improved through physical activity participation in older adults, via increased bone health, functional capacity and independent living, as well as reduced depression, anxiety, and stress (Carr, 2001; Ministry of Health, 2003; National Health Committee, 1998).

Despite the strong evidence for the health benefits associated with physical activity, older adults are a population at risk of insufficient physical activity to achieve these health benefits (National Ageing Research Institute, 2003; Taylor *et al.*, 2004). Concurrently, the prevalence of diseases related to inactivity such as obesity, diabetes, and cardiovascular disease are increasing internationally (World Health Organization, 2004). Asian Indians are a group of particular interest, as they have been shown to exhibit a high prevalence of overweight and obesity, hypertension, and diabetes (Ramachandran *et al.*, 2001; Ramaiya, Kodali, and Alberti, 1991). Additionally, this prevalence of lifestyle related diseases is even higher in the older Asian Indian population (Swami, Bhatia, Gupta, and Bhatia, 2005).

The World Health Organization has advocated for the promotion of participating in regular moderate-intensity physical activity on most days for all people, from youth into old age (World Health

Organization, 2004). The development and effectiveness of physical activity research and interventions with older populations has been well documented. Intervention components identified as important for success with older adults include: providing telephone counselling, using motivational interviewing and the transtheoretical model, and enlisting General Practitioners (family physicians) to provide physical activity advice (Conn, Minor, Burks, Rantz, and Pomeroy, 2003; King, 2001; Sherrington *et al.*, 2004; Taylor *et al.*, 2004).

But what of the practicalities of conducting such interventions and research? While a plethora of literature is available that reports on physical activity research with older adults, a paucity of information pertaining to the successful elements of conducting such research with this population exists. Therefore, this paper outlines important issues to consider when planning and conducting physical activity research with older adults. Information is drawn from the literature and also from practical experience gained from two physical activity studies for older adults in Auckland, New Zealand, which are described separately below. The purpose of this description of these two studies is to allow the reader a context from which to consider the suggestions made later in this paper.

Tele Walk Study

The TeleWalk study was a randomised controlled trial of telephone-based physical activity counselling for community-dwelling older adults (Kolt, Schofield, Kerse *et al.*, 2004; Kolt, Schofield, Kerse, Garrett, and Oliver, 2005; Kolt, Schofield, Kerse, Oliver, and Garrett, 2005; Kolt, Schofield, Oliver, Dose *et al.*, 2004; Kolt, Schofield, Oliver, and Kerse, 2004). In total, 186 participants (63 male, 123 female) aged 74 ± 6 years were recruited through three general practice clinics in Auckland, New Zealand, between 2003 and 2004. Participants were randomised to participate in either assessments only (control group), or assessments and physical activity counselling (intervention group). Participants in the intervention group received approximately eight telephone calls over a three-month period from a physical activity specialist, as well as related printed material. At

intervention completion, participants in the intervention group ($n = 90$) were posted a questionnaire to assess their perceptions of the utility and quality of the service provided during the intervention. Feedback gathered from both the process evaluation, and the motivational counselling telephone calls, was used to identify a number of issues outlined in the present paper.

Body Size and Physical Activity Levels in Older Asian Indians (BPI)

The BPI was a community-based cross-sectional study, to identify the prevalence, and correlates, of overweight and obesity in a group of older Asian Indians living in New Zealand (Kolt, Schofield, Chadha, Oliver, and Rush, 2005). Body size measures included body mass index (BMI, height / weight²), waist circumference, and body fat percentage using bioelectrical impedance. Physical activity level was determined using seven-day pedometry. Information on nutritional practices, perceptions of weight status, and socio-environmental variables that may be associated with physical activity and/or increased body size was collected with a self-report questionnaire. Participants ($n = 112$, 50 male, 62 female) were recruited through Asian Indian community groups in Auckland, New Zealand, and were aged 67.5 ± 7.6 years. Research findings and lessons learnt from the data collection processes are discussed in this paper.

Older Adults and Physical Activity

The consideration of physical activity motives and barriers specific to older adults is integral to effective intervention design and delivery. Key themes related to intervention effectiveness with older adults have been identified as physical health, specialist involvement, intervention design and delivery, and safety and social support, all of which are discussed separately below.

Physical Health

Older adults are disproportionate users of healthcare services and stand to gain substantial health benefits by being sufficiently physically active. Even so, physical activity statistics indicate that a

majority of older adults remain insufficiently active. This phenomenon leads to the assumption that improved health is not a sufficient motivator for this population to participate in a physically active lifestyle. Indeed, a recent study of older Asian Indians living in the United States showed that concerns about the possibilities of physical activity causing ill health and/or injury were primary barriers to increased physical activity (Kalavar, Kolt, Giles, and Driver, 2005). These findings were consistent with previous literature that has shown adults in older age are concerned about injuring or over-exerting themselves (British Heart Foundation National Centre for Physical Activity and Health, 2003). In contrast, health and medical reasons have been consistently reported as the primary motivator for physical activity participation by older adults (Schutzer and Graves, 2004), including older Asian Indians living in New Zealand (Kolt and Chadha, 2003) and in the United States (Kalavar *et al.*, 2005). One explanation for this contradiction is the heterogeneous nature of the elderly population, in terms of health status and existing medical issues. This phenomenon was identified in the TeleWalk study, whereby participants exhibited a wide range of health and medical conditions, from no current illnesses or injuries, to having one or more chronic diseases, requiring hip or knee replacements, and requiring an aid to walk. Alongside the diverse health conditions of participants, a wide range of medication use was also found. Consequently, participants who had experienced minimal health decline were less likely to report the risk of ill health or injury as a barrier to physical activity, while those that were unwell or in discomfort were more concerned about the likelihood of physical activity exacerbating their current condition.

Existing medical issues are commonly cited as a barrier to physical activity participation (British Heart Foundation National Centre for Physical Activity and Health, 2003; Lim and Taylor, 2005; National Ageing Research Institute, 2003; Schutzer and Graves, 2004), however, individuals who experience such medical issues are a population who would be likely to gain the most from increased participation in physical activity. Therefore, flexibility in physical

activity prescription and goal setting as well as empathy towards the individual participant, are essential for effective intervention delivery. One common problem experienced during both the TeleWalk and BPI studies was that the accumulation of 30 minutes of daily moderate intensity physical activity was an intimidating, and initially unrealistic, expectation of some participants. While the 30-minute goal is commonly cited in health promotion literature (Department of Health, 2004; Mazzeo et al., 1998; World Health Organization, 2003), and has shown to be related to improved health status in older adults (Brach, Simonsick, Kritchevsky, Yaffe, and Newman, 2004), it is nonetheless important to tailor the intervention to suit individual abilities and initial willingness to comply. This may mean that participants are simply encouraged to walk very short distances as part of everyday activity at the preliminary stage of an intervention, and that goals are regularly reassessed and hopefully increased. This ‘stages of change’ method is best utilised within the framework of the transtheoretical model (Prochaska, DiClemente, and Norcross, 1992), and using the approaches of motivational interviewing (Miller, 1983) and cognitive-behavioural therapy (Beck, 1976). Combined, these approaches provide an informed basis on which to develop and implement interventions with older adults. Strategies such as expressing empathy, progressive goal setting, identifying motivators and barriers, increasing knowledge, identifying cognitive dissonance, and relapse prevention are fundamental components of these approaches.

A related issue identified during the TeleWalk study was that participants perceived health status and ability to participate in activity was often inaccurate, and resulted in reduced activity participation. For example, although participants were pre-screened by their GP for any conditions for which walking would be contraindicated, a number of individuals felt that they were not able to become more physically active because of health issues. Conversely, although participants had also been screened for insufficient physical activity levels, a number felt that there was no benefit to be gained from increased participation. The latter issue is well explained by Lehr et al. (Lehr and Jüchtern, 1996) in the following statement: “...sport for reason of maintaining

good health, does not motivate older people to increased physical activity as long as the individual has no physical problem.” One solution to the perceptions versus reality paradox may be to involve exercise and medical specialists to provide specialist knowledge and advice to encourage participants to increase their physical activity.

Specialist Involvement

Physician involvement in study recruitment and/or intervention delivery is beneficial for two reasons: firstly, older adults are a group likely to have regular contact with their physician (See Tai, Gould, and Iliffe, 1997), and secondly, medical specialist advocacy and advice is well regarded in this population (Godin and Shephard, 1990; Schutzer and Graves, 2004). The TeleWalk study took the approach of involving physicians as advocates of a physical activity intervention, inviting participation in the intervention by way of a letter from their physician. This approach proved successful, and participants frequently commented to the researchers that they felt their physician thought it important for them to be more physically active. Physicians also stand to gain from this type of research involvement, in that it requires little time, and is a tangible action that engages them further in patient wellbeing.

The involvement of physical activity and/or health promotion specialists is also important in physical activity interventions for older adults. As with physician involvement, specialist experience and knowledge are attributes that this population value, an issue that was made clear during both the TeleWalk and BPI studies. All staff involved in both studies were of at least Master’s level education, and specialists in physical activity and health promotion. Participants from both studies were interested in the education level and experience of the researchers that they dealt with. Comments from the TeleWalk participant evaluation showed that participants valued the counsellor advice, and a small proportion would have liked to receive even more technical medical information. Likewise, participants from the BPI study particularly valued the information provided to them by one of

the primary researchers in the study, who was a visiting Professor from the University of Delhi.

As well as specialist involvement, experience with both studies has shown that regular interaction and relationship development is important with older adults, to develop trust and enhance participant interaction and communication. This was particularly true for the TeleWalk study, whereby four or more telephone calls over a one month period were required before some participants were able to communicate openly with the activity counsellor. The implication here is that intervention design must allow adequate time for relationship development, and protocols must be flexible enough to allow the researcher time to develop this relationship at a pace that is comfortable for the participant. This may also influence the method by which information is delivered to the participant.

Information Delivery

Telephone counselling in particular has been purported as an ideal form of intervention delivery with this population, due to the personal yet un-invasive nature of telephone calls, flexibility in timing, and low cost (Castro and King, 2002). This approach was successfully applied in the TeleWalk study, however, the process evaluation showed that some participants would have preferred to have more face-to-face interaction with the counsellor. Further discussion with participants revealed that they felt physical activity instructions may have been easier to understand if the counsellor provided one session where activities could be demonstrated in person.

In contrast, face-to-face communication was predominantly applied during the BPI study, and issues arose when using written forms of communication. Poor eyesight and language difficulties meant that some participants required extra assistance to read and understand questionnaires and physical activity recommendations. This did not mean that the written information was unhelpful. In fact, many participants took their activity recommendations home to their families for further discussion, exemplifying the potential of written communication to reach more than individual participants.

Additionally, of the participants in the TeleWalk study that received mail-out information, over 80% either agreed or strongly agreed that the written information motivated them to be physically active. Hence, a combination of intervention delivery methods may be most appropriate for use with older adults (in person, verbally, in writing). Clear, precise explanations are essential, in languages most appropriate to the study population.

Participant Safety and Social Support

The concerns of older adults about how their physical ability and health status may predispose them to increased risk of injury have been discussed earlier in this paper. In addition to these intrinsic risk factors, the external environment also poses a number of safety risks pertinent to the elderly, which can be significant obstacles to physical activity for this population (Centers for Disease Control and Prevention, 1999). For instance, particular concerns consistently raised by participants in the TeleWalk study in relation to undertaking more physical activity were neighbourhood crime, unrestrained dogs, and uneven sidewalks. Conversely, a recent survey of factors associated with physical activity in older Australian adults found that fear of falling and perceptions of neighbourhood safety were not independent predictors of activity participation (Lim and Taylor, 2005). While the barriers to physical activity participation are clearly complex, environmental barriers are nonetheless an important component to acknowledge and minimise where possible.

Social support is an ideal method by which to alleviate somewhat the environmental barriers to older adults being physically active. Discussions with participants of the TeleWalk study showed that many felt more comfortable walking in their neighbourhood when walking with friends and family members. Correspondingly, support from significant others, activity and health specialists, and other program participants all correlate strongly with activity participation in older adults (King, 2001). A study of older Australian exercisers showed that social reasons were key motivators for participating in activity, especially for females, those in middle age (55 - 64 years), and those

without a tertiary education (Kolt, Driver, and Giles, 2004). Indeed, increased social support was the most common recommendation from participants in the TeleWalk participant evaluation, in terms of meeting and walking with other participants of a similar ability. Social activity within a homogenous group is of particular importance to older people, who can become socially isolated (Stead, Wimbush, Eadie, and Teer, 1997), and may have differing life circumstances to younger population groups, such as living with and caring for others (Bauman, Bellew, Vita, Brown, and Owen, 2002). The latter issue also means that flexibility in timing and duration of intervention delivery is essential.

Conclusion

Effective intervention is required to encourage sufficient physical activity participation in older adults. While components related to intervention success with this population have been well documented, less literature has focused on the pragmatic issues of intervention delivery and participant evaluation of intervention appropriateness. Older adults are a population that experience specific barriers and motivators to physical activity participation, which must be allowed for during intervention development. Where possible, both medical/health and physical activity specialists should be involved in intervention recruitment and/or delivery. Actual and perceived health concerns, physical abilities, and differing life circumstances must be considered. Intervention delivery must be empathetic and flexible. Information provided must be easily understood, using a variety of communication methods (telephone, in person, printed material). Social support measures are also important for continued participation. Of paramount importance is that process evaluation of any intervention is required to inform the development of future interventions that are effective and acceptable to the target population.

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Senior Residents of ‘Pay and Stay’ Homes: An Examination of Health and Physical Activity

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ABSTRACT

As ‘population aging’ occurs in India, the health and well-being of older adults (seniors) becomes an important consideration. Even though older adults who are physically active have lower morbidity and mortality rates than inactive older adults, majority of seniors do not participate in physical activity. In order to deliver effective health policy and positive health outcomes, it is important to understand the factors that may lead to decreasing activity with age. The present study examined the health status and physical activities of senior male and female residents of ‘pay and stay’ homes in south India, as well as explored the physical activity barriers reported by residents of these homes. Results show gender differences in self-evaluation of health and types of health limitations reported. By and large, a higher percentage of health limitations were reported by inactive than the active seniors. Walking appears to be the primary form of physical activity that seniors engage in. However, nearly half reported environmental barriers for engaging in physical activity.

Keywords :

The sheer number of adults over age 60 in India is staggering. From 56 million seniors in the 1991 census, India reported 71 million seniors in 2001, and this number is projected to increase to 179 million seniors in 2031 (Rajan, Sarma and Mishra, 2003). As ‘population aging’ occurs in India, adults may be living for multiple decades past the retirement age.

In view of this huge growth it is imperative that health promotion is taken up on a war footing such that this large group of seniors don't become disabled and dependent. One way of doing this is by effectively implementing physical activity since good health has been shown to go hand in hand with physical activity. Research has repeatedly shown that physical activity in older adults is associated with decreased mortality, hypertension, cardiovascular disease, depression, falls, and disability (Tinetti, Baker, McAvay, 1994; Appel, Champagne and Harsha, 2003; Fried, Kronmal, and Bild, 1998; Jamuna and Ramamurti, 2000). Regardless of age, there appears to be overwhelming evidence to support the benefits of a physically active lifestyle and how this behavior can contribute to quality of life and the 'feel much better phenomenon' (Jamuna, Ramamurti, and Reddy, 2001; Mathieu, 1999; Ruchlin and Lachs, 1999; Spirduso, 1995).

Although evidence is mounting that remaining physically active is health-beneficial as one gets older, there is concern among health professionals regarding the high proportion of those in later life who, in many cases unintentionally, allow physical activity to become more a matter of memory than of a regular occurrence (Blair and Wei, 2000; Rowe and Kahn, 1998; World Health Organization, 1997). As reported by Jones (1998), data from several sources consistently find that participation in leisure-time physical activity decreases as age increases, and that women are less likely than men to engage in moderate or vigorous physical activity. In 2005, Wilcox, Oberrecht, Bopp, Kammermann, and McElmurray reported that approximately half of the women aged 65-74 years and nearly two-thirds of women aged 75 and over reported no leisure-time physical activity lasting ten minutes or longer. Similarly in India, Chakraborti (2004) indicated that a high proportion of older people lead sedentary lives despite the known benefits of physical activity. In another study by Malhotra and Chadha (1997), an assessment of the physical activities of senior pensioners and non-pensioners was carried out in New Delhi. In this study, less than one-fifth of the pensioners were engaged in physical activity while the non-pensioners largely engaged in household chores and social activities. The reasons for low participation in physical activity levels may include declining physical abilities, cultural expectations and norms about age-appropriate activities, lack of awareness, absence of health promotion efforts, low motivation, and barriers to participation. Kolt, Giles, Driver and Chadha (2002)

examined exercise participation motives of older adults living in New Delhi and found that maintaining and improving fitness, releasing tension, being part of a group, and keeping good health were the top reasons for participating in regular exercise.

Much of the gerontological literature in India pertaining to health and physical activity has largely focused on the community-dwelling older adults (Ramamurti and Jamuna, 2000; Ramamurti and Jamuna, 2006). Peripheral attention has been paid to health and physical activities of senior residents of formal care homes (also known as 'old age homes' in India). In one study by Bagga (1997), depression and listlessness were reportedly pronounced among residents in the home for the aged in Pune where they lived as guests and got cooked food with no hassles of running a household. Nearly one-third of the respondents did not experience any physical difficulty in climbing stairs, walking for a kilometer or more, and doing manual work. Singh (1999) reiterated the importance of staff and care providers encouraging mobility and participation in daily activities of the home for the aged. From reviewing the gerontological literature, it becomes clear that a comprehensive examination of health limitations, types of physical activities, and perceived barriers to physical activity have not been investigated in a large sample of formal care homes for seniors (Ramamurti and Jamuna, 1996). This is not surprising given that such homes for seniors are a relatively new phenomenon in India.

In the past decade, urban India has seen a phenomenal increase in the number of formal care homes for seniors. Destitute homes for the elderly have been in India for more than a hundred years. What is somewhat new in India is the concept of 'pay and stay' homes. Affordable largely for middle or higher income families, these homes are often inhabited by older adults some of whom may be childless, or those who sought this as an arrangement of ensuring late life care in the absence of children within immediacy. For some, this is a viable alternative to a life of feeling marginalized when living with offspring, while others prefer this option to maintain their independence into late adulthood (Ramamurti and Jamuna, 1997). Regardless of the reason for their relocation, there has been an enormous rise in the number of 'pay and stay' homes in India. Despite the rapid increase in the number of these homes, very little is known about the older adults who live in them. Attempting to fill gaps in the research literature on

health and physical activities among residents of ‘pay and stay’ homes, this study is a step in that direction.

Even though older adults who are physically active have lower morbidity and mortality rates than inactive older adults, majority of seniors do not participate in physical activity. Physical activity encompasses a range of behaviors that may occur in different modes, at varying frequencies, and intensities. An important question that arises is why such a small percentage of the elderly population remains physically active? Some barriers may have to do with individual characteristics (such as health status, motivation, knowledge of the benefits of being physically active, or environmental factors (facilitative physical environment, support for being physically active, encouragement from others). In order to increase the number of seniors who are physically active, the individual, social, and environmental contexts in which the individual is aging must be considered. Ecological models of physical activity (Sallis and Owen, 1999) emphasize the anticipated interplay of demographic, psychological, social and environmental variables in influencing physical activity patterns. Much research is being conducted throughout the world to find effective ways of promoting physical activity levels in the senior population, and thereby, acquiring a public health benefit. In a recent review by Hillsdon, Foster, Naidoo and Crombie (2004), the authors suggested that further research is necessary to recruit older adults into physical activity interventions as sedentary older adults comprise the largest section of the inactive population. In order to deliver effective health policy and positive health outcomes, it is important to understand the factors that may lead to decreasing activity with age.

The present study examined the health status and physical activities of senior male and female residents of ‘pay and stay’ homes, as well as explored the physical activity barriers reported by residents of these homes. Adopting the definition used by the World Health Organization (2004), the term ‘physical activity’ has been used as an encompassing term to refer to any body movement produced by a skeletal muscle that results in energy expenditure.

Method

Sample

The present study involved a total of 150 residents of 'pay and stay' homes in the principal southern cities of Bangalore, Chennai, Hyderabad and Tiruvananthapuram. Using HelpAge India's current listing of 'pay and stay' homes, the proportion of interviews in each city was determined. Since the maximum 'pay and stay' homes were located in Bangalore than any of the other three cities, nearly 41% of the respondents were selected from Bangalore. Similarly, Tiruvananthapuram had the least number of 'pay and stay' homes among the four cities. Consequently, only 12% of those interviewed were residents of 'pay and stay' homes there.

Majority of respondents were female (65%). While the reported average age was 75 years ($SD=5$), the age range was from 65-90 years. Only 15% of this sample reported living alone before relocating to an old age home. The rest reported living with spouse, children or siblings prior to relocation. More than half of the respondents (58%) reported being currently widowed. Majority of the respondents reported being Hindu (83%). This was followed by Muslims (7.4%), Christians (6%) and Others (Sikhs, Jains, and Buddhists) who accounted for less than 4% of the sample. The educational profile was quite diverse for this population. While 5% reported having less than 5 years of formal education, nearly 31% reported 6-10 years of formal education. The average length of stay in the home was 4.3 years ($SD=2.1$).

Respondents were interviewed by prior appointment in the facility in which they resided. Interviews were conducted privately (mostly in the forenoon), after an explanation was provided about the study and voluntary participation was solicited. Interviews were conducted in English often interspersed with the local language of the state. The interviews lasted for approximately 60-90 minutes.

Instruments

Participants responded to a detailed interview that included questions about socio-demographic characteristics, perceptions of life in the home, self-reported health status, impairments, physical activity, barriers to physical activity, and level of ADL and help received. The Self-Rated Health Index (Lawton and Brody, 1969) was used to examine health limitations that respondents experienced. Measures of functional disability included Activities of Daily Living (Katz, Moskowitz, Jackson and Jaffe, 1963) that assessed bathing, grooming,

and feeding oneself. These instruments were tested for their suitability to the Indian context and were found to be reliable and valid.

Results

Participants in this study were asked to evaluate their overall health on a four-point scale with 1 (poor) to 4 (excellent). As shown in Table 1, female respondents rated their health significantly higher than male respondents ($p < .05$).

Table 1. Self-reported health status by gender

Gender	Mean	SD	F	Significance
Male	2.19	.942	6.6336	$P < .05$
Female	2.64	1.10		

Using Lawton's Self-Rated Health Index, the current health limitations by each respondent was assessed. A list of health conditions was presented, and respondents were asked, "In the past year, have you had _____ (name of each health limitation)?" Examining the frequency of responses, the top five health limitations reported by male and female respondents was determined.

Table 2. Top five health limitations as reported by male and female senior residents (in percentage)

MALE		FEMALE	
Health Limitation (% reported having)		Health Limitation (% reported having)	
Arthritis	(14.0%)	Diabetes	(21.3%)
Diabetes	(13.3%)	Arthritis	(17.3%)
Cataract	(13.0%)	Hypertension	(16.0%)
Prostate trouble	(9.3%)	Cataract	(16.0%)
Hypertension	(7.3%)	Heart trouble	(16.0%)

Table 2 provides a listing of the top five health limitations as reported by male and female respondents in this study. The common health limitations reported by both male and female respondents include arthritis, diabetes, cataract, and hypertension. Nearly 10% of the male respondents reported having prostate trouble while 16% of the female respondents reported having heart trouble.

Based on self-reports of participation or non-participation in physical activity, the sample of respondents was divided into two

groups. One was called the active group while the other was labelled the non-active group. Listed in Table 3 are the percent of prevalent health limitations reported by male and female respondents who were active and inactive.

No statistically significant results from Chi-square tests for gender differences in activity levels were noted. As seen in Table 3, those active had lower rates of prevalence of various health limitations than those who were inactive. For instance, this is seen in arthritis where the inactive group had higher prevalence rates than the active group. Similarly, this is seen with diabetes, hypertension, heart trouble, and circulation problems. However, this was not true for all health limitations. For instance, 23 percent of those who were active reported prostate trouble compared to 3 percent of those who were inactive. Similarly, 12 per cent of the inactive female respondents had a broken hip compared to none who were active. This was also seen with broken bones being reported by a higher percentage of inactive seniors than active seniors. It is possible that the health limitation resulted in the respondent curtailing or quitting physical activity.

Table 3. Prevalent Health Limitations by Physical Activity Group, stratified by gender

Prevalent Health Limitation	Male		Female	
	Inactive (n=25)	Active (n=72)	Inactive (n=19)	Active (n=34)
Arthritis	40%	22.2%	31.6%	24.1%
Diabetes	36%	31%	52%	29.4%
Hypertension	32%	27%	36.8%	11.8%
Heart trouble	36%	20.8%	21.1%	11.8%
Circulation problems	16%	4.2%	10.5%	11.8%
Paralysis	8%	1.4%	10.5%	0%
Effects of stroke	4%	2.8%	10.5%	2.9%
Stomach ulcer	8%	2.8%	5.3%	5.9%
Asthma	28%	18.1%	36.8%	5.9%
Dizziness	0%	1.4%	5.5%	0%
Kidney trouble	4%	1.4%	5.3%	2.9%

Glaucoma	20%	12.5%	15.8%	2.9%
Insomnia	8%	8.3%	10.5%	2.9%
Cataract	32%	22.2%	22.1%	15.3%
Cancer/Tumor	8%	2.8%	5.3%	0%
Liver trouble	8%	1.4%	0%	0%
Gall bladder trouble	12%	4.2%	0%	2.9%
Bladder trouble	24%	4.2%	26.3%	14.7%
Broken hip	12%	0%	0%	0%
Broken bones	16%	5.6%	8.8%	0%
Anemia	4%	1.4%	10.5%	2.9%
Parkinson's disease	0%	0%	0%	0%
Nervousness	4%	2.8%	3.8%	0%
Prostate trouble	0%	0%	3%	23%

The physical activity measure included responses to two self-reported questions. The first question evaluated the type of physical activity. Those who did not engage in any physical activity were categorized as 'not applicable.' The second question evaluated the perceived barriers to physical activity. Those who did not perceive any types of barriers were coded in the category 'none.' As seen in Table 4, nearly 30 percent of the respondents did not report engaging in any type of physical activity. The most common physical activity was walking within the confines of the 'pay and stay' home compound. This was followed by walking outside (10.7%), and practicing yoga/pranayama (7.3%). Only the upscale 'pay and stay' homes appeared to have resources such as a swimming pool/health gym and other exercise programmes in their facility for being physically active. Yet very few respondents appeared to take advantage of these.

Table 4. Self-Reported type of Physical Activity (in percentage) by the Senior Residents

Type of Physical Activity	Total
Walking inside the compound	40.7%
Not Applicable	29.3%

Walking outside the facility	10.7%
Yoga/Pranayama	7.3%
Swimming	4%
Climbing stairs within the facility	2.7%
Kitchen Help/Personal Chores	2.7%
Using exercise equipment	2.7%

Table 5. Reported Barriers (in percentage) to Physical Activity by the Senior Residents

Barriers to Physical Activity	Male	Female	Total
Environmental Barriers	16%	26%	42%
Security/Safety Barriers	3%	12%	15.3%
Social/Motivational Barriers	3.3%	7.3%	10.6%
Health Barriers	9.3%	15.3%	24.7%
None	3.3%	4%	7.3%

As shown in Table 5, perceived barriers were categorized into four types that included environmental barriers, security/safety barriers, social barriers/motivational, and health barriers. Approximately 7 percent of this sample did not perceive any barriers to physical activity. The single most frequent reason that respondents reported was environmental barriers. These include car traffic, absence of proper footpath or facilities, concerns with potholes, open manholes, ditches, not having a park nearby, outside pollution, and weather issues. This was followed by health barriers that were reported by nearly one-fourth of the respondents. These included fear of falling or injury, diminishing eyesight and hearing, arthritis or health limitations that preclude participation, and inability / inhibition to climb up and down stairs. Safety/Security barriers included concerns with crime against older adults, and poor lighting. This was reported by nearly 15% of the respondents. Nearly 10% identified Social/Motivational barriers that addressed the absence of exercise mates and the lack of motivation for participation.

The data on Activities of Daily Living (ADL) limitations for this sample of seniors residing in 'pay and stay' homes showed that nearly all respondents were able to maintain self-care with regard to bathing (98.7%), grooming (99.3%) and feeding (99.3%).

Discussion

In India, the demographic projections of aging necessitate that the challenges of elder care must be suitably addressed now. It is expected that 'pay and stay' facilities will gradually establish themselves as a viable late life arrangement, especially in urban India. With increasing age, the risk of functional disability rises. The five top health limitations that were reported by respondents all carry the potential for increased functional disability. Functional disability carries implications for extent of reliance on services to meet the dependency needs of elderly individuals. An important question is how these 'pay and stay' homes are equipped to handle possible future limitations that seniors may report with ADL.

In this study, gender differences in the levels of physical activity and reported health limitations were not statistically significant. This is similar to the findings reported by Brach, Simonsick, Kritchevsky, Yagge and Newman (2004) who found that the association between physical activity group and physical function was similar for community dwelling senior men and women.

Overall, the findings suggest that the active senior residents were likely to report lower prevalence rates of health limitations. In general, these findings suggest that physical activity is more beneficial than being physically inactive. Whether seniors recognise this or not everyone has the opportunity to be active. Physical activity promotion can happen just about anywhere, and in fact, for it to be successful; it needs to happen just about everywhere. Seniors are individuals with their own blend of characteristics and life experiences so awareness raising efforts need to be somewhat individualized, paying attention to the needs of the senior.

'Pay and stay' homes in India must promote opportunities for physical activity, and pay attention to those factors that enhance the quality of life in late adulthood. We need to create positive environments where physical activity is accessible, safe, affordable, and supported. Along with the community, these senior homes need to

identify specifically perceived barriers to being physically active among inactive seniors. From such an assessment, one may determine what competencies and skills may be required to go beyond barriers. Walking appears to be the most favoured form of physical activity. Initiatives should focus on promoting physical activity by creating walking trails within the community. In this study, concerns with environmental barriers were paramount. This is not surprising given the infrastructure development in and around many of these ‘pay and stay’ homes. By contrast, Kalavar, Kolt, Giles and Driver (2004) reported existing health problems and fear of injury as salient barriers in their study of Asian Indian immigrant elders to the United States. Among inactive elders, they also found that non-familial sources were more effective in promoting participation in physical activity than familial sources.

In Roger’s Diffusion of Innovation theory (1983), social networks and interpersonal channels are considered more important than mass media in influencing behaviour change. In fact, innovations do not seem to “take off” until social networks have become activated – until people are actively talking about the innovative idea, program or product. Programs that seek to educate seniors about the value of physical activity and provide individuals with the support network they need to continue a physically active lifestyle, enhance motivation as well as the skills needed to establish and maintain physical activity

Further research is recommended at a national level to develop a broader understanding of the experiences of late life living in different ‘pay and stay’ facilities. Preventive health care strategies must be emphasized so the significance of physical activity and health outcomes are highlighted. Future research should closely examine the relationship between physical activity and specific health outcomes as linked with well-being in late life.

Limitations

Apart from the aforesaid observations it should be noted that the present study has some limitations. Self-reporting is a feasible approach to assessing physical activity and health limitations, primarily because of the low cost and ease of administration (Tudor-Locke, Williams, Reis, and Pluto, 2002). However, self-report measures can lead to information bias due to inaccurate recall or intentional misreporting, especially for older adults (Stone, 1995).

While physical activity was assessed in this study, it became apparent that an examination of intensity and frequency of activity are also important considerations. Additionally, it is only through a longitudinal analysis that it will remain known whether physical activity leads to health limitations or health limitations result in physical inactivity.

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Physical Activity and Aging in the Context of HIV/AIDS in Botswana

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ABSTRACT

Botswana is one of the Sub-Saharan African nations that are on the hot pursuit of strategies for surviving the assault that have been visited upon their populations by the insidious and hydra-headed epidemic known as HIV/AIDS. The search of the literature reveals that aging in Botswana is jeopardized by HIV/AIDS, but scant attention has been paid to how much of physical activity has been provided for as one way of mitigating the impacts of HIV/AIDS, and palpably raising the process and level of aging in the nation. That is the main issue we seek to address in this paper as a way of filling the gap in knowledge concerning this subject.

Keywords: HIV, AIDS, Aging, Physical Activity, Health, Older Adults

Physical activity and aging in Botswana had until now been perceived purely as a scientific subject that may not easily be considered under the ambience and intellectual discourse of psychosocial perspectives that really inform the aging process. Thus, in most cases, aging in Botswana had been considered more

exclusively as a process that must always include concerns for genetical inheritance, health care, spirituality, nutrition and physical activity. However, recent developments in the health sector have indicated that these concerns alone might not provide all the answers that we need in the current move towards enhancing the aging process in the world. Many more issues that had never been imagined must be anticipated and explored with a view to articulating how they affect aging, and the literature has been rather thin in this aspect. This present paper, therefore, selectively analyses how the HIV/AIDS epidemic in Botswana has induced the need for physical activity and how much of that has been provided for as a way of mitigating the negative impacts of HIV/AIDS and, thereby, raising the process and level of aging in Botswana. To achieve this purpose, the paper begins with an exploration of the HIV/AIDS context, the effects of HIV/AIDS on aging, policy provisions for physical activity, actual provisions and utilisation of the physical activities, emergent challenges and mitigations and possible effects these might have on aging in the nation of Botswana.

The HIV/AIDS context

Botswana's need for physical activity can be explained by some of the major social challenge's that the nation has had to confront. First, it is instructive to note that Botswana is a land-locked country that shares boundaries with Namibia in the North West, Zimbabwe in the North East, Zambia in the South East and South Africa in the South. It's population as at 2002 stood at 1.7 million and relies mostly on diamonds, cattle and tourism for its national income. Classed as one of the most peaceful modern democracies with stable governance in Africa, Botswana has emerged as one of the few African countries with a growing economy. However, perhaps more importantly in the context of this discussion, Botswana is one of the four countries in Sub-Saharan African with a very high adult HIV prevalence rate.

Globally, more than 20 million people are known to have died of AIDS since it was first reported 25 years ago, and by the end of 2004 an estimated 39 million people were living with HIV (UNAIDS &

WHO, 2005, p 17) and since 1985, HIV and AIDS have become the leading causes of premature death and, indeed, the largest killer in Botswana. The statistics have been well reported in the literature, but for the purpose of clearly delineating the magnitude of the phenomenon we seek to explore in this discussion we turn attention to the data. Botswana is located in Sub-Saharan Africa where seven out of 100 adults are living with HIV and where the increased number of AIDS deaths every year is almost the same as the number of new infections (UNAIDS & WHO, 2005, p.24). The adult HIV prevalence rate was 33.80% with 69,000 orphans cumulated, the situation had changed to the worse by 2001 (Oduaran, 2005, pp.7-9). As indicated elsewhere, the percentage of Batswana (the people of Botswana; Motswana is the singular form of the word) adults (aged 15-49) living with HIV had steadily risen to 38.80% of which 170,000 were women (aged 15-49) and 28,000 children (aged 0-14) in 2001 (Oduaran, 2004, p.24). This has clear implications for physical activity and aging in the nation.

HIV and AIDS have wrought incalculable human misery on the population of Botswana. AIDS has reversed negatively the several years of development that Botswana had worked so painfully to put in motion. HIV and AIDS have collectively reduced life expectancy to a figure as low as 39 years in Botswana. The epidemic has robbed the nation of its most productive people, deepened and spread poverty, reversed human development, worsened gender inequalities as more female than male fall victims, and regrettably reduced the capacity of the government to provide other social services (Oduaran, 2005, p.11). Michiels (2001, pp.3-10) has explored fully the implications of the devastating effects of HIV and AIDS for other social capital investments. Rather we should now consider what this means for physical activity and aging.

The effects of HIV/AIDS on aging

Anti-retroviral drugs that are on a large scale use, largely among the well-to-do and educated socio-economic stratum of society, are simply prolonging the evil day when death must surely come to the

HIV sufferers in Botswana. There is presently a “false” hope of survival and copiously deceptive longevity achievement rates in Botswana. For the vast majority of the people, HIV/AIDS will continue to be a major concern for aging. That is partly one reason the Botswana government and civil society are not relenting in their efforts to combat HIV/AIDS using all available resources and strategies among which, in the context of this discussion, has been the promotion of physical activity and active aging. In fact, towards effectively using this strategy, the government has enunciated a policy on sport and recreation.

Botswana’s national policy on sport and recreation

In response to major challenges that the nation must confront with commitment, Botswana has a tradition of initiating specific policies. It would be observed that Botswana has since April 2001 inaugurated a national sport and recreation policy that is expected to be monitored by the national Ministry of Labour and Home Affairs.

Botswana’s policy on sport and recreation is understandably based on the premise that “participation in sport and physical recreation can significantly contribute to the quality of life and the development as well as the reputation of the country,” (Republic of Botswana, 2001, p.3). Towards realising the goals implied in that premise, the nation’s policy on sports and recreation has been carefully woven around the major guiding principles of democracy, development, unity and self-reliance.

In Botswana, it is generally believed that sport and recreation will immensely improve physical fitness and health. However, beyond that, it is believed that sports and recreation can contribute positively to national social harmony, nation building, self-reliance and togetherness. These same values have been factored into many other national policies to date.

A close look at the national policy on sport and recreation in Botswana would reveal that the nation believes that one way of promoting or enhancing its democratic principles is to invest in and promote the physical, mental and moral qualities that are relevant to

national aspirations. The policy also emphasizes the strong belief in the prospects of sports and recreation to help in increasing savings in health care when people are healthy. Consequently, Batswana are encouraged to participate in a wide range of physical activities as a way of boosting their health and stemming the attack of diseases, including possibly HIV.

The careful implementation of the said policy is believed to have the prospects of helping individual Batswana to develop positive personality and to self-actualise by generating in them the spirit of competitiveness as they at the same time improve their physical fitness and health and alleviating the stress of modern life (Republic of Botswana, 2001, p.5). If these pillars on which the development of sports and recreation stand, it is quite possible that we have a nation, where people are physically fit and healthy and therefore can live much longer than the 41+ years healthy life expectancy level that is currently prevailing in Sub-Saharan Africa because of the HIV/AIDS epidemic.

The ideas that dominate the framework for promoting physical activity and aging in Botswana through sports and recreation as laid out in the policy have been translated into one purpose, nine goals and six values.

The purpose

The purpose of the sport and recreation policy is “to provide a framework for the development of an active healthy and productive society, in line with the national long term vision.” (Republic of Botswana, 2001, p.6).

The goals

- Towards achieving that purpose, the policy aims at achieving the following goals:
- To identify appropriate needs and opportunities for all Batswana to be involved in sport and physical recreation in order to enable them to realize their full potential;

- To identify strategies for the development of sport and recreation within the context of Botswana's cultural and socio-economic set-up;
- To outline the structures of sport and recreation system that will promote access and participation in sport by all, including the rural population, women and people with disabilities;
- To promote awareness on general fitness, health, recreational and leisure activities of the individual Botswana citizen, regardless of age, sex, occupation and status;
- To identify strategies that aim to develop young sport-persons in and out of school and throughout a system of progression over time to become outstanding international sport persons;
- To promote opportunities for persons with talent to excel in their chosen sport disciplines as a means of self-fulfilment and promotion of national image;
- To propose various possibilities and strategies for improving resource provision for sport and recreation by Government, parastatal, private sector and Non-Governmental Organisations;
- To spell out the role of different stakeholders in sport administration and management; and
- To integrate and synthesize the world of work with sport and recreation.

In order to achieve the purpose, goals and values of sports and recreation in the nation, nine priority areas have been identified. However, in the context of this discussion, Priority Areas 6 and 9 are much more relevant, and it is therefore necessary to turn attention to them.

Priority area number six is aimed at increasing and sustaining the quality and number of people trained in all aspects of sport (Republic of Botswana, 2001:p.9). What that means is that the nation is aware that the major way you can provide and improve on the quality of physical activity that can enhance aging is to have trained personnel. This partly signifies the realisation that we cannot remain tied to the

previous practice of engaging in physical activities purely based on sheer interest.

Towards cultivating the necessary foundation in this area, the policy has placed emphasis on the establishment of national sport education training and accreditation systems. It is hoped that by doing that, it would be possible to streamline sport personnel development programmes and systems such that there could be standard provision of traditional and modern physical activities that can enhance aging processes across the nation. Within the caveat specified in this priority area, the nation, according to the policy, hopes to put in place strategies for the effective recruitment, training and retaining volunteer personnel who will complement whatever services the government can provide. It was also intended that achieving the goals in this priority area would require the provision of education and training programs in the aspects of planning, designing, managing and maintaining physical activity facilities in the nation.

Priority area nine is intended to develop a broad based recreation and leisure program (Republic of Botswana, 2001, p.11). The basic conceptualisation in this priority area is to harness all existing and possible recreation and leisure programs in the nation and put them into use for the effective and efficient provision of physical activities that are sport related. Towards meeting the goals of this priority area, the policy has clearly articulated and outlined the objectives of developing recreational programs for everybody and encouraging equal opportunities for participation in sport and recreation. In this case, it is intended that no one is discriminated against on any basis, be it age, gender, religion, race, geographical location, political persuasion and socio-economic status. In that, wise, sport-related physical activities in Botswana readily bring in to their caveat everyone who may be willing to participate.

In Botswana, there is the realisation that sport is very closely related to health and aging. That is why the policy has brought in the role of the Ministry of Health. The health ministry that is expected to provide all medical centers in the country with sufficient, modern and

effective recreational facilities for use by patients and staff may be well disposed towards using them.

One peculiar feature of the policy is the anticipation of the role traditional sport and games might play in promoting physical activity and thereby enhancing aging. Prior to the introduction of modern sport and games the people had been introduced to physical activity like wrestling, gaming, running and jumping, among others. Consequently, the policy anticipates that whatever traditional sport and games the people might have been used to should be encouraged to grow as a way of further complementing the modern sport provisions.

If these priority areas are to be properly cultivated, it is expected that adequate provisions be made for structures that are appropriate for the implementation of the policy. Thus, the Botswana National Sports Council (BNSC), the Botswana National Olympic Associations (BNOA) as well as any other relevant sport structures have been assigned appropriate roles that can help in the planning and implementation process. Whilst it might not be possible to carefully analyze these roles, it is rewarding to note that Botswana has in recent times witnessed re-juvenation in the provision of sport and physical activities.

Actual provision of physical activities and health programmes

Physical activity

As with other government policies, there is always a gap between policy and actual provisions. Whilst the government could be said to have improved somewhat on its funding of sport, it would appear there is still a lot we can do. On the positive side, the government has in addition to the national sports stadium in Gaborone embarked upon the development of sports and recreation centres in other major towns and villages like the City of Francistown, Maun, Molepolole, Serowe, Selibe Phikwe, Lobatse and Ghantsi to name but a few. The intention is to broaden the base of participation in sport and recreation by the populace and throughout the country. In some instances, existing facilities like those at the national sports stadium have been upgraded.

Another dimension to the provision of sports and recreation facilities by the government has been the development and improvement of facilities by parastatals like the University of Botswana and the armed and uniform services like the Botswana Defence Force, the Botswana Police Service, the Botswana Prison Service, the Botswana Customs and Immigration to name just a few. The point here is that these parastatals and forces are supposed to enhance the health and active aging propensities of their members directly. Therefore, it would be correct to say that government has recognised the importance of its role in the promoting physical activity and aging in the nation. However, it is also clear that government alone may not be able to do everything, and has, therefore, encouraged the participation of the private sector in the provision of sport and recreation facilities across the nation.

Private participation in the provision of sport recreation facilities takes the form of investment in that direction by clubs and associations and private individuals. For example, in Gaborone City a golf club encourages active involvement of its members in playing golf for reasons of physical exercise, recreation and competition. In the same manner, there are associations for athletics, volleyball, netball, rugby, football, among others. These bodies have made their own inputs.

One major private initiative in the promotion of physical activity and aging in Botswana has been the increase in the provision of gyms. In the City of Gaborone, more than five well-equipped gyms allow the public to come in daily for participation in different sport and games for a token fee. To that effect, it might be correct to say that Botswana has laid a foundation for the promotion of sport-related physical activities that could improve aging in the nation. To what extent the goals and objectives enunciated in policy might have been effectively achieved is another issue altogether. One thing that is however clear, is the increasing investment the Government is making in the aspects of health care to which we must now direct attention.

Health care programs

The Botswana Health Care (BHC) delivery system comprises government health institutions, missionary, and private-commercial health institutions. The Government, through its Ministry of Health, is the main provider of health care. The health care delivery system, which is arguably one of the best in Africa, is based on the principles of Primary Health Care (PHC) as described in the Alma- declaration of 1978 (Ministry of Health, 1996). PHC in Botswana emphasizes and ensures community participation in inter-sect oral collaboration and equity. It also ensures that health care is affordable and accessible to the people.

The National Health Care system is organised hierarchically into Mobile stops at the bottom, Health posts, Clinics, Primary Hospitals, District hospitals, and Referral hospitals at the apex. While the Referral hospitals are located in the two cities of Gaborone (the capital) and Francistown, the district hospitals are located in the headquarters of the 11 districts and town councils. The Primary Health Care (PHC) system is mainly run by the Ministry of Local Government through the Council Health Departments. The lower the level of the health care system, the smaller is the population it is serving. For instance, while each health clinic serves households within a kilometre radius, health posts serve those residents in remote areas, and in cattle posts. The health and medical personnel are also evenly distributed across these tiers of health care organization with, specialized professionals being located mainly at the referral (apex) hospitals, while the general medical and other health professionals are located in the district and primary hospitals. The clinics, health posts and mobile stops are manned mainly by experienced registered nurses, midwives and family welfare educators. The PHC system is periodically supervised and monitored by the District Health Team (DHT), which is set up by the Local Government Council Health Department. The DHTs are composed of multidisciplinary health professionals including medical officers, environmental health officers, nutrition officers, health educational officers and others. The curriculum of nursing education and preparation in Botswana,

particularly at advanced level courses, includes the diagnosis of, and prescription of treatment for the common infectious and non-infectious diseases. The nurses, who form the backbone of the health care delivery system, are thus adequately and technically prepared for the services in the PHC system. This is more so when there is a big shortage of qualified medical and other health professionals. For instance, while the ratio of qualified physicians to the population is 1:4130, that of nurses is 1:404. These values are however substantially better than the sub-Saharan Africa average (18,488 and 6,504 for doctors and nurses respectively) and all developing countries average (5,767 and 4,715 for doctors and nurses respectively) (UNDP, 1996). There are however, plans underway to expand both the infrastructure and human resources to bring health care, even closer to the people. Active aging is compromised by health-hindering behaviours.

The Prevalence of health-hindering behaviour

Active aging has been impaired by the short life expectancy being experienced now, and we had drawn attention to the high HIV/AIDS prevalence rate. However, other diseases are responsible for the observation made. For instance in 1996, of 4,507 deaths registered in hospitals, 13.1 percent were caused by pneumonia, 11.9 percent by AIDS, and 11.5 percent by pulmonary tuberculosis (Central Statistics Office 1997). However, AIDS appears to be the leading cause of death in Botswana.

The people's culture plays a big role in people's attitude and behavior towards health. Batswana people generally love eating lots of vegetables while they are averse to lean meat and food high in fat. Thus, the average Motswana tends to eat a nutritionally balanced diet while avoiding the health-threatening foods. This may be partly responsible for the low blood pressure among Batswana. According to the data collected on ordinary working class Batswana of both sexes in the Human Performance Laboratory of the Department of Physical Education, University of Botswana, the average systolic BP was 105 mmHg while the corresponding diastolic BP was 65 mmHg. Thus, the

average Motswana is characterised by low blood pressure. However this is despite the fact that the average Motswana, particularly the women, tend to be obese.

The typical Motswana appears to be averse to habitual participation in physical exercises as a way to develop and maintain physical fitness. However, a relatively small number, particularly the males, participate in social sports on Sunday mornings. Studies on Botswana indicate that the average Botswana have low levels of physical fitness when compared with their international counterparts. There is a common saying among Botswana that “in Botswana there is no hurry”. Owolabi and Kalui (1997) speculated that this common saying, suggesting a tendency of the average Motswana, not to want to exert oneself, might be a reflection of the people’s low level of fitness. This speculation is further reinforced by the various private and Government employers’ open and frequently expressed concerns on the low level of productivity of the average Motswana (Ministry of Health, 1996, Owolabi 1999). The Botswana labour market was ranked 16th in terms of productivity, among the top 20 African nations by the Africa Competitiveness report of 1997 (Lloyd, 1999). However, majority of commentators and Government officials and employers blame this low productivity on the attitude of the average Motswana to work. Corporate health fitness programs are almost non-existent although some private employers provide recreational facilities for their employees’ use in the evenings and at weekends. Even in these few cases there is no corporate policy encouraging employees to participate in recreation. It is left to individual worker’s decision. Alcohol consumption is very prevalent. In most cases it takes the form of social drinking and is fast becoming a regular cultural celebration every weekend from Friday to Sunday. This appetite for alcohol, which appears to be enjoying some cultural acceptance, is fast degenerating into cases of alcohol abuse and alcoholism. In fact, many of the social problems evident are being traced to and blamed on alcohol misuse and abuse (particularly among the youths). These problems include juvenile delinquency, drug abuse, automobile accidents, and early sexual intercourse and teenage

parenthood, spousal abuse and criminal tendencies like burglary, rape and vandalism (Owolabi & Kalui, 1997). The challenges are however not insurmountable.

Remediating the situation

Health promotion activities form a major pillar of the Primary Health Care (PHC) delivery system of Botswana. Special committees are in place to address specific health promotion issues at all the tiers of operations on health matters. This is in line with the system of governance in Botswana where the grassroots in the remote areas of the country have an immediate governing body, which is accountable to the district governing body, which in turn, is accountable to the central government based at the capital of the country. Whenever any specific health problem has been identified, the District Health Team or the Central Health Committee either uses a Committee in place to deal with the issue or sets up another, depending on the uniqueness and emergency nature of the health problem. Students' clubs and other voluntary organizations are launched in schools and higher institutions and among other high-risk groups in the society. The Health promotion committees formed at the central level are also replicated at the district level with the Central Committee playing coordinating and supervisory roles.

Specialised Government agencies such as the Botswana National Productivity Center (BNPC) organise regular training workshops and seminars for different cadres of employees and employers in order to enhance individual and national productivity. In addition, they set aside a week in the year during which intense activities on public enlightenment and awareness programs are carried out. Such weeks often have multi-organisational flavour, including cultural activities. Youth clubs and other voluntary organisations, particularly institutions of learning, periodically organise cultural activities and festivals and use these as forums for disseminating the message on the health-promoting behaviour. They may also celebrate special weeks during which activities on public enlightenment and awareness are intensified using multimedia approaches. The youth clubs and voluntary

organizations currently existing in schools and higher institutions include Anti-smoking clubs, No-to-Alcohol clubs, HIV/AIDS awareness club, No-early sex clubs etc. These health promotion clubs and organizations, in conjunction with the parent central committee at the Ministry of Health, also spread their 'gospels' to the populace through posters, handbills. Again, the immunization of children is free, and people who are ill but cannot afford the meagre fee are never turned away for lack of funds.

Emergent challenges and mitigations

Even though the nation has in place a policy that could be used in promoting physical activity and aging, a cursory look at what is on the ground would suggest that there are some challenges that need to be confronted. It might be useful to examine only the major challenges.

HIV/AIDS is the first major challenge that must be confronted. For government is spending one-third of its annual budget on the war against the HIV/AIDS epidemic. What this means is that the correct emphasis that has been placed on putting HIV/AIDS in check must draw attention away from sport and games for now. Whatever additional budgetary outlay government would have made in the aspects of improving sport facilities has had to wait or experience a cutback.

The second challenge that is facing the promotion of physical activity related to aging is that of ignorance. Now, it is just a handful of the people who are participating in sport-related physical activity, especially jogging, cycling, swimming and walking. The vast major of the people, roughly 70% of them, have not bought into the culture of sport and recreation as anticipated. What this means is that the public and private sport and recreation facilities providers still need to embark on vigorous campaign to enlist the participation of the populace.

The third challenge might be in the aspect of effective coordination of sport-related physical activities in the nation. There are many providers of facilities, including big hotels, but the co-ordination of existing facilities is one aspect that leaves much to be

desired. For there is need to ascertain the extent to which personnel operating the facilities have been trained and their training constantly upgraded so as to ensure that they have knowledge of the most current standards of practice.

Possible effects on aging

Botswana could be said to have embarked upon the mission of laying down foundations for the provision of sport and games-related physical activity that can enhance aging in Botswana. It has also engaged in the rapid development of its health sector. It is also correct to say that there has been no research so far to determine the effect of the provisions on aging in the country. That means that scholars in the professional fields of lifelong learning, adult education, sports science, recreation and leisure, developmental psychology, health and nutrition need to come together to engage in a multi-disciplinary research that is directed at physical activity and aging in an HIV/AIDS context such as we have in Botswana.

Conclusion

This paper has attempted to examine some of the major issues in physical activity and aging in Botswana in the prevailing situation of HIV/AIDS epidemic. We have reported that in 2001 the nation has put in place a sport and recreation policy. We also pointed out there could be gaps between policy and action, especially in the light of challenges facing the nation of Botswana. Fortunately, those challenges can be effectively mitigated and thereby improving the planning and implementation of public and private physical activities related to sports, games and recreation. This way aging can be effectively improved in Botswana.

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Implications of Selective Optimization with Compensation on the Physical, Formal and Informal Leisure Patterns of Adults

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ABSTRACT

Principles of life span developmental psychology suggest that individuals selectively optimise functioning in central domains of their lives. Most research has emphasized the emotional domain whereas leisure has been relatively overlooked despite the fact that leisure and activities are tied to the promotion of physical and mental health in older adults. Using data from individuals aged 50 and above from all three waves of the Americans' Changing Lives study (N = 1,913), we examined evidence for selective optimisation with compensation (SOC) in three domains of leisure activities: informal, formal, and physical. The national sample was 66% female, 31% black, and 54% married respondents, with a mean age of 66.6 years old initially. Disability, rather than age, accounted for the change in activity with the greatest declines evident in physical leisure and the least decline in the informal domain. We found evidence for SOC in predicting depressive symptoms primarily in the formal domain. Findings suggest individuals are well-able to maintain informal leisure patterns despite changes in disability, and that disability may prevent buffering effects for physical forms of leisure. Results imply that helping older adults to maintain participation in formal leisure pursuits have important implications for promoting well-being in later life.

Key words : Activity, Older Adults, Depressive Symptoms, Well-Being, Optimisation

Researchers have shown a growing interest within social gerontology in the activity patterns of individuals during later life. Participation in leisure activities predicts maintenance or even increases in the physical functioning and health of older adults (Avlund *et al.*, 2004; Lefrançois, Leclerc, and Poulin, 1998; Seeman *et al.*, 1995) and lower mortality (Bath and Morgan, 1998; Lennartsson and Silverstein, 2001). Activities also predict increased psychological well-being and lower depressive symptoms (Everard, Lack, Fisher, and Baum, 2000; Freysinger, Alessio, and Mehdizadeh, 1993; Morgan and Bath, 1998; Searle, Mahon, Iso-Ahola, Sdrolia, and van Dyck, 1995).

Life span developmental psychology (Baltes, 1968) provides a theoretical framework to examine the leisure patterns of adults (Lefrançois *et al.*, 1998). This framework views the development of individuals as a multi-directional trade-off of gains and losses; as individuals age the ratio of gains to losses may decrease across various domains of development (Baltes, 1997). However, decline in older adults' development in later life may actually be interpreted as a successful method of adaptation.

Selective optimisation with compensation (SOC, Baltes and Baltes, 1990) is a meta-model to study how individuals successfully adapt and develop across the lifespan. Processes of selection, optimisation, and compensation are central to the regulation of development for older adults and they are conceptualized to achieve movement toward higher levels of functioning through growth and avoid negative outcomes through maintenance (Staudinger, Marsiske, and Baltes, 1993). Through "selection" individuals focus their energy and resources on those life domains that are the most meaningful and important to their development. "Optimisation" serves as a means of maximising the individuals' performance and reserves for a particular behaviour or participation in an activity (Baltes and Baltes, 1990), and must occur in order to actually achieve these higher levels of development. This phase includes processes such as acquiring, refining, coordinating, and applying available resources to the selected domains. "Compensation" stresses the importance of managing loss and decline. During compensation when loss or decline threatens individuals' functioning they invest their resources in maintaining levels of performance (Staudinger *et al.*, 1993).

Leisure research has primarily used the SOC model to explain findings (Menec, 2003; Strain, Grabusic, Searle, and Dunn, 2002; Zimmer, Hickey, and Searle, 1997) rather than using it as the theoretical framework in guiding investigations into the leisure patterns occurring in later life (Horgas, Wilms, and Baltes, 1998; Lang, Riekman, and Baltes, 2002). Lang and colleagues (2002) examined whether older adults with more resources were better functioning in everyday life and found that resource-rich individuals invested more social time with their family members, reduced the diversity of activities in their most salient domain of leisure, and increased their variability of time investments across activities. Horgas and colleagues (1998) found different patterns of age-related and residency-related activity across discretionary and obligatory activity domains consistent, indicating that individuals restrict the domains of activity in which they concentrate their efforts to maintain or even optimise performance in these activities.

This paper evaluates evidence for selective optimisation with compensation in the physical, formal, and informal domains of leisure functioning. We propose that the domain showing the greatest decline in involvement over time will be physical leisure, while participation in informal leisure activities will see the least decline with age and disability. In addition, we hypothesize that selecting, optimising, and compensating in these three domains of leisure will be associated with enhancing individuals' levels of well-being, with informal leisure being the most important domain for promoting well-being in later life.

Methods

Data and Sample

We used data from the Americans' Changing Lives (ACL) dataset, an 8-year longitudinal study conducted in 1986, 1989, and 1994 (see House, 2003, for full details). The ACL is a multistage stratified area probability sample of persons 25 years and over who live in the continental United States with oversampling of African Americans and individuals 60 years and over during Wave 1 (see House, 2003 for a full description of the study and methods).

Individuals living in group homes or institutions were excluded from the survey population.

The analytic sample for this study was selected using individuals aged 50 and above at Wave 1, and utilizes information from only the first two waves of data from the ACL dataset. This subsample consisted of 1,913 participants with a mean age of 66.6 years old at the initial wave. The sample was comprised of 54% married respondents and was 66% female and 31% African American.

Concepts and Measures

This study focused on three subdomains of leisure: physical, formal, and informal. Individuals' level of participation in these activities was gathered through self-report measures.

Physical Leisure.

Individuals' participation in physical leisure was assessed through three items: "How often do you work in the garden or yard?", "How often do you engage in active sports or exercise?", and "How often do you take walks?" and were measured on a 4-point scale ranging from 0 (never) to 3 (often). These items were standardized and used to create an index of physical leisure involvement from 0 to 9.

Formal Leisure.

The formal leisure patterns of participants were measured by their involvement in two types of activities: "How often do you attend meetings or programs of groups, clubs, or organizations?" and "How often do you usually attend religious services?" A 6-point scale was used to measure these items ranging from 0 (never) to 5 (more than once a week). An index of formal leisure involvement was created by standardising these items with a possible range of 0 to 10.

Informal Leisure.

Subjects' participation in informal leisure was assessed through two items: "In a typical week, about how many times do you talk on the phone with friends, neighbours, and relatives?" and "How often do you get together with friends, neighbours or relatives to do things like go out or visit in each other's homes?". These items were also

measured on a 6-point scale ranging from 0 (never) to 5 (more than once a week) and were then standardized and used to create an index of informal leisure involvement ranging from 0 to 10.

Psychological Well-Being.

The 11-item version of the Center for Epidemiological Studies Depression Scale (CESD; Radloff, 1977) was used as a measure of psychological well-being in this study. This scale has been used in numerous studies to assess levels of depressive symptoms and it is known to be a reliable and valid indicator of this outcome (Ensel, 1986). Higher scores on this measure refer indicate more depressive symptoms, ranging from 1 (hardly ever) to 3 (most of the time). Sample questions included items such as “In the past week I felt depressed”, “In the past week I felt lonely”, and “In the past week, I enjoyed life” (reverse coded).

Functional Impairment.

Participants were asked how much difficulty they had in five activities at each wave (such as bathing and walking) to determine functional impairment. These items were used to create an index of functional health ranging from 0 (no functional impairment) to 3 (severe functional impairment).

Results

Correlations Between and Within Domains of Leisure

The correlations of the three domains of leisure were examined over both waves. As expected, the correlations were all significant and were more highly correlated within domains of leisure over waves than between domains (Table 1). Only physical leisure was significantly correlated with age, and these correlations were relatively weak. However, all domains of leisure were significantly correlated with functional impairment, with involvement in leisure activity declining as the severity of the functional impairment that the older adults reported difficulty with increased.

Table 1. Correlations among leisure variables, age and functional impairments

Variables	1	2	3	4	5	6	7	8	9
Inf1	—								
Form1	.253*	—							
Phys1	.150*	.195*	—						
Inf2	.483*	.192*	.132*	—					
Form2	.205*	.725*	.147*	.296*	—				
Phys2	.085*	.150*	.623*	.206*	.217*	—			
Age	-.010	.001	-.196*	-.101	.002	-.219*	—		
FI1	-.096*	-.136*	-.434*	-.135*	-.113*	-.356*	.237*	—	
FI2	-.079*	-.091*	-.378*	-.163*	-.154*	-.438*	.263*	.632*	—
SD	2.43	3.07	2.58	2.33	3.08	2.46	8.94	.98	.98
M	6.83	4.48	4.67	7.07	4.49	4.43	66.62	.64	.62

Note. Inf1 = Informal leisure at Wave 1; Form1 = Formal leisure at Wave1; Phys1 = Physical leisure at Wave 1; Inf2 = Informal leisure at Wave 2; Form2 = Formal Leisure at Wave 2; Phys2 = Physical Leisure at Wave 2; FI1 = Functional health at Wave 1; FI2 = Functional health at Wave 2.

* $p < .01$.

Evidence of "Selection" in Leisure Activities

In their article on selection processes and social contact in later life, Lang and Carstensen (1994) used correlations among the degree of emotional closeness and age to demonstrate the process of selection. This same process was utilized here with correlations between functional impairment and leisure involvement in the three domains to reveal how individuals select among domains of leisure activity over time (Figure 1). Functional abilities, rather than age, were used because the correlation analyses indicated that this is a more accurate predictor of change in leisure behaviour. While participation in all domains of leisure activity decreases as a function of physical functioning, evidence suggests that individuals actively select among these domains. Involvement in informal leisure activities remains quite high throughout later life. Older adults' participation in formal

leisure activities is the second most stable domain, and the steepest decline is evident within the domain of physical leisure pursuits.

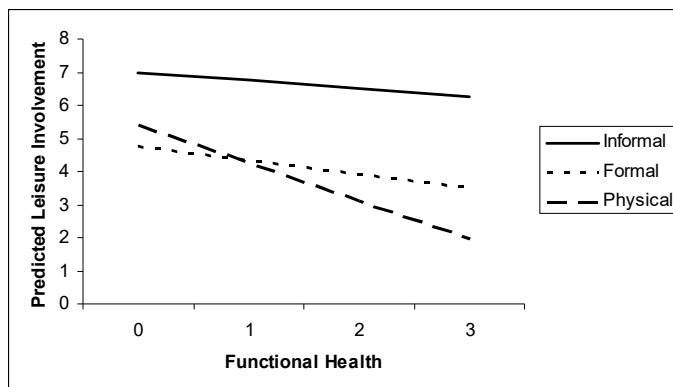


Figure 1. Leisure involvement by functional health
(0 = high functioning, 3 = low functioning)

Evidence of “Optimisation” in Leisure Activities

One of our primary aims was to determine whether individuals optimise functioning in the three domains of leisure physical, formal, and informal when physical functioning is accounted for through their degree of functional impairment. This was measured for each domain of leisure as the change in functional health between Waves 1 and 2 multiplied by the change in leisure activity during these waves. Those individuals whose functional impairments increased but maintained or even increased their leisure participation in a domain of leisure were defined as “optimisers” within that category of leisure.

Evidence of “Compensation” in Leisure Activities

Life span developmental theory suggests that compensation of activity in one domain can have implications in other domains, such as psychological well-being. Carstensen (1995) has stated that a strategy of relative involvement may be thought of as a means of maintaining a sense of well-being in the face of loss or finitude. Regression analyses were performed to determine if optimising in a particular domain of leisure had a compensatory effect on the presence of depressive symptoms at Wave 2. Several covariates were added to the model

including age, gender, race, socioeconomic status, marital status, status of functional impairment at Wave 1 and 2, leisure status in that domain at Wave 1 and 2, and depressive symptoms present during Wave 1.

Physical Leisure

The regression model investigating the effect of physical leisure on depressive symptoms at Wave 2 explained 35.5% of the variance. The significant predictors of depressive symptoms in this model were depressive symptoms at Wave 1 ($b = .402, p < .000$), functional health at Wave 2 ($b = .256, p < .000$), age ($b = -.056, p = .015$), socioeconomic status ($b = -.109, p < .000$), and involvement in physical activities at Wave 2 ($b = -.069, p = .015$). Categorization as an optimiser in physical leisure activities approached significance as a predictor ($b = -.039, p = .077$), but was not found to significantly reduce depressive symptoms at Wave 2.

Formal Leisure

Approximately 36% of the variance was explained in the model testing the effect of formal leisure participation on depressive symptoms at Wave 2. Significant predictors of depressive symptoms in this model included depressive symptoms at Wave 1 ($b = .401, p < .000$), functional health at Wave 2 ($b = 9.354, p < .000$), age ($b = -.048, p = .039$), socioeconomic status ($b = -.109, p < .000$), and participation in formal leisure activities at Wave 1 ($b = .064, p = .036$) and at Wave 2 ($b = -.087, p = .005$). Optimising performance in the domain of formal leisure was found to be a significant predictor for decreasing depressive symptoms at Wave 2 ($b = -.064, p = .003$).

Informal Leisure

The regression model investigating the effect of informal leisure on depressive symptoms at Wave 2 explained 35.6% of the variance. Significant predictors of depression in this model included depressive symptoms at Wave 1 ($b = .396, p < .000$), functional health at Wave 2 ($b = .279, p < .000$), age ($b = -.052, p = .024$), socioeconomic status ($b = -.111, p < .000$), and participation in informal leisure at Wave 1 ($b = .049, p = .049$) and Wave 2 ($b = -.079, p = .001$). However, optimising performance in the domain of informal leisure was not a significant predictor of depressive symptoms ($b = -.001, p = .977$). Tables 2 through 4 report the results of these regression analyses.

Table 2. Regression analyses for optimising informal leisure on depressive symptoms

Variable	B	SE B	B
CESD1	.40	.02	.40***
FI1	-.13	.12	-.03
FI2	1.10	.11	.28***
Age	-.02	.01	-.05*
Female	.09	.18	.01
Black	.30	.20	.04
Other Race	.53	.63	.02
Married	-.09	.18	-.01
SES	-.44	.10	-.11***
INF1	.08	.04	.05*
INF2	-.13	.04	-.08**
OPTINF	-.001	.04	-.001
<i>R</i> ²	.356		
<i>F</i>	67.89***		

Note : CESD1 = Depressive symptoms at Wave 1.

FI1 = Functional health at Wave 1.

FI2 = Functional health at Wave 2.

INF1 = Informal leisure at Wave 1.

INF2 = Informal leisure at Wave 2.

OPTINF = Optimisation of Informal leisure.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3. Regression analyses for optimising formal leisure on depressive symptoms

Variable	B	SE B	B
CESD1	.40	.02	.40***
FI1	-.09	.12	-.02
FI2	1.04	.11	.26***
Age	-.02	.01	-.05*
Female	.12	.18	.02
Black	.33	.20	.04
Other Race	.58	.63	.02
Married	-.03	.18	-.003
SES	-.43	.10	-.11***
FORM1	.08	.04	.06*
FORM2	-.11	.04	-.09**
OPTFORM	-.11	.04	-.06**
<i>R</i> ²	.359		
<i>F</i>	68.85***		

Note : CESD1 = Depressive symptoms at Wave 1.

FI1 = Functional health at Wave 1.

FI2 = Functional health at Wave 2.

FORM1 = Informal leisure at Wave 1.

FORM2 = Informal leisure at Wave 2.

OPTFORM = Optimisation of Informal leisure.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4. Regression Analyses for Optimising Physical Leisure on Depressive Symptoms

Variable	B	SE B	B
CESD1	.40	.02	.40***
FI1	-.10	.12	-.02
FI2	1.01	.12	.26***
Age	-.03	.01	-.06*
Female	.04	.18	.004
Black	.26	.20	.03
Other Race	.49	.63	.02
Married	-.002	.18	.00
SES	-.43	.10	-.11***
PHYS1	.04	.04	.02
PHYS2	-.11	.04	-.07*
OPTPHYS	-.07	.04	-.04
R^2	.355		
F	67.73***		

Note. CESD1 = Depressive symptoms at Wave 1.

FI1 = Functional health at Wave 1.

FI2 = Functional health at Wave 2.

INF1 = Informal leisure at Wave 1.

INF2 = Informal leisure at Wave 2.

OPTINF = Optimisation of Informal leisure.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Partial correlations were conducted, controlling for activities of daily living, to support the findings that optimising performance in certain types of leisure activities is significantly related to decreasing depressive symptoms. Correlation analyses were tested between depressive symptoms at Wave 2 and the optimising functioning in each domain of leisure between Waves 1 and 2. Results support findings from the regression analyses with only optimisation of formal leisure being significantly correlated with depressive symptoms at Wave 2.

Discussion

This study established that the process of selective optimisation with compensation occurs across the physical, formal, and informal domains of leisure. The robust nature of these findings is suggested by the use of a nationally representative sample of adults in later life. Results show that older adults continue to remain involved in leisure activities in later life, and that disability, rather than age, has the most significant impact on changes in leisure behaviour. More importantly, these findings demonstrate that continued engagement in certain types of leisure activities may have important implications for promoting the psychological well-being of individuals later in life.

According to the SOC model, we expected to find evidence of selection, optimisation, and compensation in the leisure activities of older adults. Selection was indicated by the maintenance of some leisure activities and the reduction of others as functional impairments increased, or resources decreased. As expected, informal leisure activities with friends and family were the most selected leisure domain, as they generally rely more on emotional resources and can be more easily maintained regardless of age and disability. Interestingly, formal leisure involvement shows minimal declines due to increasing functional impairments, although these activities were not as frequently participated in as informal leisure. This may be related to the nature of formal leisure activities in this study and be more a function of the religious activities rather than participation in clubs and organizations. The process of optimisation is defined as the enhancement or focusing of resources and means that are necessary to reach a goal in order to maximize quality of life (Baltes and Baltes, 1990). Optimisation was indicated by the proportion of individuals who were able to maintain or even increase their engagement in at least one of the three leisure domains even while they experienced increases in their functional impairment.

Perhaps the most interesting finding of this study appeared when the effect of optimising among domains of leisure on predicting levels of depressive symptoms was tested. Contrary to the authors' predictions, optimising performance in informal leisure activities with friends and families had no impact on decreasing depressive symptoms. While these social networks and intimate relationships are no doubt important to older adults, they did not provide the same

benefits to depressive symptoms as formal leisure activities. Formal leisure was the only domain that significantly reduced depressive symptoms when performance of these activities was optimised, revealing the important role that these activities can play in managing the loss and decline in psychological well-being during later life. Given that physical leisure activities are highly correlated with functional abilities, it may simply be too hard for older adults to compensate for changes in health and functioning by maintaining these types of activities.

Limitations

A few limitations of this study should be mentioned. First, only a few activities were measured in each leisure domain and were by no means an exhaustive list of the leisure activities these individuals may have engaged in during the study. However, it is possible that the support for these results would actually increase if individuals were asked more extensive questions about their involvement in leisure activities. Volunteer activities typically fall into the category of formal leisure, and a recent study by Musick and Wilson (2003) found that volunteering does have an impact on reducing the depressive symptoms of older adults. In addition, leisure is defined as activities that have meaning for the participant. Some of the activities categorized as informal, formal, or physical leisure in this study, for example “How often do you work in the garden or yard?” may actually be considered productive rather than leisure activities for the participant and therefore influence the effect these activities would have on depressive symptoms.

Further research is needed to investigate a wider sample of leisure activities and the process of selective optimisation with compensation. Due to the fact that what a person considers leisure is highly individualized, alternative approaches to gathering information on how older adults reduce the diversity of their leisure activity, how they invest their energies and resources, and the impact that this has on their physical and psychological well-being need to be investigated.

In conclusion, our findings suggest that older adults do engage in the process of selective optimisation and compensation in the leisure domain. Specifically, that optimising participation in formal leisure activities may have important implications for promoting

psychological well-being among these individuals and demonstrate the important value of leisure activities during later life.

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Singing to More Good Years: Karaoke as Serious Leisure for Older Persons in Singapore

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ABSTRACT

Ask an older person on the street in Singapore what do they do for leisure, chances are 'karaoke singing' will inevitably be among the popular answers one will receive. Karaoke singing has been a popular leisure activity among Singaporeans since the 1980s. While we observe the craze among young people with karaoke, it has also caught on among the older people since mid-1990s. Karaoke is today one of the "must-haves" among recreation facilities for elderly activity centres and services. Community clubs and social clubs around the island also offer karaoke classes that are well-attended by housewives and older persons. Karaoke contests for senior citizens draw crowds of senior crooners who are ever eager to show off their newly founded talent.

Why is karaoke popular among older persons? How does it relate to the well being of older persons? This paper seeks to study karaoke and aging within the framework of activity in later life with qualitative data derived mainly from case studies of two activity centres for elderly in Singapore. In particular, the paper draws on the concept of 'serious leisure' in situating the significance of karaoke as an activity among older persons. In the following, I will first provide an overview on karaoke in Singapore before proceeding with the discussion.

Keywords: Karaoke, Singing, Leisure, Older persons, Aging, Activity

Karaoke is a hybrid term derived from two components: *kara* (empty or vacant) and *oke* (an abbreviation of *okesutra*, adopted from the English word, orchestra). Taken together, it means ‘orchestra without soloist’, referring essentially to sound tracks without the lead vocal. The word also denotes either a place or a machine that allows users to sing with pre-recorded musical accompaniments (Lum, 1996, p. 1).

Since its first debut in early 1970s, karaoke has become a popular leisure activity in Japan. Its diffusion to the world expanded as karaoke technology improved from music accompaniment in the form of an audiotape to visual karaoke in video and laser discs in the 1980s. In Singapore, karaoke started in the later 1970s as an expatriate entertainment in drinking establishments catering mostly to Japanese business people. Such a confined image of karaoke liberated in the later part of 1980s, when karaoke began to gain phenomenal popularity among the general masses. In the mid 1990s, a conservative estimate shows that there were about 600 karaoke places, ranging from expensive high club settings to “budget” karaoke places without alcohol such as those situated in community clubs nestled in the housing estates (Saito, 1997). While most of them were termed Chinese karaoke – where pop songs from Taiwan and Hong Kong in Chinese languages such as Mandarin, Cantonese and Hokkien dominate; ‘specialty’ karaoke developed to cater to specific segments in the society. These include Malay karaoke lounges, karaoke lounges in Chinatown vicinity specializing in Cantonese opera and karaoke lounges specializing in Christian songs (The Straits Times, Oct 25, 1998).

Besides enjoying karaoke at lounges and clubs, karaoke as a home entertainment was also significant in contributing to its boom in Singapore. With higher disposable income in the family due to economic prosperity in the region in the late 1980 to mid 1990s, home karaoke machines moved rapidly from a status item to a relatively common household item among middle and lower middle class families¹.

While youth have led the trend of the karaoke craze, since the mid-1990s, the trend has expanded towards the housewives and older persons. In a study of the karaoke phenomenon in Japan, Kelly (1998,

p. 77) summarised the reasons given by press and Japanese academic discourse for the phenomenon's huge success as follow:

1. karaoke satisfies a widespread love of singing;
2. it satisfies a desire to emulate favourite singing stars and is thus a means of fantasy fulfilment;
3. it is an effective way to relieve stress;
4. it serves as a forum in which individuals act strategically for their own political ends; and
5. it is a medium for communication.

To what extent are the above reasons helpful in explaining the popularity of karaoke among older persons? How does the phenomenon further contribute to the discourse on leisure and aging?

The Context: Activity centres for older persons in Singapore

The establishment of senior activity centres in Singapore reflect the changing profile of older persons in the population. The proportion of persons age 65 and over in the population has increased from 6% in 1990 to 7.4% in 2000 (Singapore Department of Statistics, 2001). With a life expectancy of age 77, more people are expected to live for more than a decade after retirement². The 2004 national health survey (Mehta, 2006) shows a remarkable improvement in health status of Singaporeans compared to the survey in 1998. The survey also shows that the rate of participation in regular exercise has risen among the 50-59 years old, from 19.7% to 24% between 1998 to 2004. Although the rate remains constant at 28% for those 60-69 years old, it shows that the activity level in terms of regular exercising is higher among the older age cohort (Ministry of Health, 2005). The development in aging expands the concern of aging beyond caring and financial issues to also include an emphasis on active aging. This reflects on one hand, policy perceptions of activity as a necessary prevention of frailty in later life; and on the other hand the desire among older persons themselves to stay active so as to maintain independence in later life. The desire to be active outside the home has led to the setting up of activity centres for healthy older persons in Singapore. It is estimated that there are about 35 activity centres (senior activities centres and neighbourhood link centres) in 2005 (Teo et.al., forthcoming). The concept of an activity centre for older person is a relatively new

addition in the landscape of organised leisure activities for older persons in Singapore. Similar to day centres, senior centres or senior citizens' centres in the West (for example, Hazan, 1980; Krout, 1989; Myerhoff, 1978), an activity centre for the older person is a hybrid of social day care centres and senior citizens' clubs or drop-in centres. It has a similar concept with the social day care centre: it is fee-paying and provides full-day organised programs five times a week for older persons. However, while social day care centres focus more on maintenance programs for older persons such as exercise program for those recovering from a stroke, the activity centre emphasizes on providing a range of leisure activities basically catering to healthy older persons.

This study focuses on two such pioneer centres (Golden activity centre and Spring activity centre)³ opened in mid-1990s in the examination of karaoke and older persons. Both centres operated within the community club premises⁴. They have members ranging from age 55 to the eighties, and has a regular daily attendance of about 30-40 members. Older women comprise about 80% of the membership, parallel to findings on gender difference in activity in later life, which suggests that for men, retirement was seen as a time to relax and rest - a time to be cared for by the family. However, for the women, 'regardless of whether she was a full-time housewife or a working woman, retirement was a time to enjoy the "freedom" from household responsibilities and dependent children (Mehta, 2003, p. 9). They thus seem more ready to participate in activities outside the families signifying one's freedom from the family.

Members at the centres are overwhelmingly Chinese, and besides mandarin, many speak mainly Chinese regional dialects such as Hokkien and Cantonese and is especially so at Golden activity centre. Women members tend to be less literate with many without formal school education. In general, the members are mainly from lower and lower middle class background; this is especially so among members at the Golden activity centre.

The members commute to the centres by themselves. While many stay within walking distance or short bus ride, others come from surrounding areas requiring a 40 minute to one hour bus ride. One woman attending the Golden activity centre said she used to spend time in the library and started commuting to the centre after learning

about the place from her friend, even though it is quite far from her home. Another couple who attended the Spring activity centre joined the centre after reading about it in newspapers, as they were looking for a place which will organizes different programs throughout the day to occupy their time. While the retired man felt that he could spend time reading newspapers in the library and establishing a regular routine exercising, his wife seems at a loss with an ‘empty nest’,

“I find that she always sort of tells me that we don’t have anything meaningful to do, meaningful in the sense that nothing really occurs but its day in day out, we just get up, take our lunch and then, like every routine, nothing. It becomes quite boring at times so I can understand her predicament.... So we were looking all over the place and we are very keen to join activities.”

Both centres charge a monthly fee⁵. The fees at Golden activity centre are much lower due to sponsored lunches everyday. In terms of activities, both centres organise regular excursions and visits to various places of interest in Singapore. Such excursions are special events on top of scheduled programs such as handicraft and karaoke. The Spring activity centre conduct more classes and have lessons such as English language, Chinese language (because many older persons cannot write Chinese characters), cooking, dancing, calligraphy and physical exercises.

Among these programs, karaoke is the most popular for older persons. At the Spring activity centre, karaoke has increased from weekly sessions to include additional sessions on Mandarin and Cantonese songs taught by volunteer instructors which accounts for most of each afternoon at the centre. When the centre was closed on Saturday, some members have privately set up their own karaoke classes during the weekends with a paid instructor. At Golden activity centre, besides regular karaoke sessions, the centre has engaged a professional singing instructor for members who are willing to pay extra fees to for the weekly lessons.

Karaoke as a ‘serious’ leisure

The demand for more karaoke among older persons at the activity centres provide a glimpse to understanding karaoke as a popular ‘sport’ among older persons in Singapore. However, I argue that the

reasons leading to its popularity do not exactly parallel with what Kelly (1998) has listed about its success for general public.

For many older persons, singing has not been part of their past-time before, instead many have only “discovered” singing after they join the activity centres. Whereas young people enjoy emulating their favourite singing stars and dream of being a star, older people has lesser of such fantasy. While karaoke is well recognized as an effective way to relieve stress among busy working people, to the older persons, it sometimes increases their stress because to sing well, they need to spend time practicing on their own before the karaoke sessions and classes. Even those who are not literate would buy a recorder to record the songs sang at the karaoke lessons and practice at home to memorise the song lyrics.

Such commitment displayed by older persons in karaoke suggests karaoke as a ‘serious’ leisure to them. In Stebbin’s (1992) construct, serious leisure differs from a casual or relaxing leisure as it demands perseverance, personal effort in the development of specially acquired knowledge and skill. It also often encompasses “membership in or identification with a group of participants with distinct beliefs, norms, values, traditions and performance standards (Mannell, 1993, p.130).

During fieldwork at a karaoke class in Golden activity centre where there were 19 students (18 women and 1 man), the instructor notified the students of a karaoke competition which would be held over the weekend and encouraged them to attend. An interview with a judge at one such karaoke competition revealed that the older contestants took the competition seriously. They listened intensely to the comments from the judges, and in trying to improve their skills, even asked if the judges conduct singing classes so that they could participate.

As a member of a karaoke group, older persons are not isolated to singing in the centre, instead, their interest in karaoke has prompted them to keep abreast of opportunities outside the centre. They are effectively part of a wider karaoke network that has emerged informally and meet at various karaoke activities in town (including competitions, lessons karaoke centres).

Achieving a sense of accomplishment

One of the concerns with aging is the negative impact of retirement on the psychological well being of individuals. Social gerontologists have sought to explain how individuals adjust to aging with theoretical perspectives such as role theory, activity theory and continuity theory (Hooyman & Kiyak, 1996). Men who retired from work and women facing 'empty nest' may experience a loss of self-esteem as they feel less valuable in society. As members at the centres mentioned, it is the sense of loss and the desire to fill their waking hours with some activities that have led them to participate at the centre. Karaoke singing, although not necessarily a hobby they have expected to commit before coming to the centre, have somehow developed to become an important commitment to them. The commitment in terms of practicing hard to improve singing skills and attending the karaoke sessions and classes faithfully have resemblance to work-like activity and attitude. The investment of time and effort resulting in improvements in one's singing skills, to the extent that one feels qualified to participate in karaoke competition, brings with it a sense of accomplishment and heightens self-esteem. To the older women who have been housewives, the recognition that comes with opportunities to perform in public and winning in karaoke competitions have boosted their self-confidence and a sense of success, which they may not have felt so directly as a homemaker.

At the Golden activity centre, grandma Lian who was a housewife and later became a Chinese religious medium transformed to become a star in the singing class as she discovered her singing talent and went on to win in various karaoke competitions. At the Spring activity centre, there is less focus on solo performance or competition but they practice hard and perform as a group in the community. Over the years, they have volunteered to present at nursing homes and day care facilities, as well as at neighbourhood primary schools during festive celebrations. They have also performed at community functions as well as senior citizen's week.

While fostering a sense of wellbeing among older persons, performing karaoke in the community is also increasingly seen as a way where older persons are recognized in society. A well publicized Senior Citizen's Music Group is another example. The group formed among retirees organizes twice-weekly outdoor karaoke sessions for group members to sing in the open. The outdoor jam sessions were so

well received by the public that it attracted invitations to give public performances and feature in the news. In a news report, one of its founding members (a 55 year old retiree) sounded overwhelmed with their “success”, “We thank everybody for being so interested in what we are doing. But now, we’re all very stressed because we have to put up a proper performance at Simei (where they were invited). It’s not the same as just picking up the mike and singing.” When asked why the organizer wanted to invite the group, he responded, “We invited them to play as encouragement, to let them know senior citizens have a place in our society.” While the deliberate attempt to invite older persons rather than young professional singers may sound patronizing to the old, it can also be interpreted as an endorsement of the older persons’ achievement in karaoke singing. Feeling in demand due to their skills in singing has a positive impact on the self-esteem of the retirees even though it is sometimes accompanied by stress.

Creating a network of social support

One negative implication to the sense of loss experienced in later years is one’s vulnerability to loneliness. There is extensive literature in gerontology on the significance of social support in affecting one’s wellbeing and ability to combat loneliness (Rosow, 1967; Shanas, 1979). Support from family, friends, neighbours and acquaintances affect the quality of lives of older persons with family often seen as the primary source of social and emotional support.

Singapore has a high rate of co-residence. In 2000, 87.6% of older persons were staying with their children and/or spouse (Singapore Department of Statistics, 2001). However, while this suggests the availability of family as a support network, it does not necessarily eliminate loneliness, as older persons usually found themselves alone in the day when their children are at work. One female member at Spring activity centre joined after she stopped caring for her grandchildren as “what I really need is to occupy the day where I am all alone.” For the retired men, the drastic increase in waking hours at home upon retirement may strain relationship with their spouse, especially when there had been little prior communication due to time spent at work. Some male members were relieved to have the centre as a ‘second home’ to go to in the day. One pioneer male member at the Spring activity centre who retired from being a bus driver confessed that he did not have a good relationship

with his wife and had spent his free time travelling on public transport round the island, and sitting around in coffee shop before he joined the centre.

Karaoke, as the dominant activity at the centres, contributes to the development of social support network among the members. At Spring activity centre, karaoke sessions are held at the main multi-purpose area, with chairs lined up in rows facing the television screen. A handful of members who don't participate would still and listen to participants singing. I have observed one older man, who has mild dementia, always sitting at the side quietly while the others sang. He later began to join in the group after consistent persuasion of other members.

However, it is conflicting as to whether the karaoke activity itself promotes socialization. As Kelly notes (1998, p. 79), although karaoke does provide a comfortable atmosphere for interaction, communication is relegated to the periphery in most cases because the noise level combined with the time spent selecting a song and singing and applauding others. In addition, during karaoke sessions (whether there is an instructor or otherwise), members are discouraged to talk as it could distract the singing. Ironically, karaoke has caused tensions among members. At Spring activity centre, members have quarrelled over who should sing first, and the unfairness of letting someone sing more than the others. A passing remark from one member about another's singing and attitude had also led to argument and unhappiness during karaoke sessions. At Golden activity centre, a conflict was once so serious that police had to intervene. Subsequently rules are set up to prevent/resolve such arguments such as setting up a queuing system. Fortunately, such unhappy instances reduce over time when members learn to get along better with each other. They sometimes laugh at themselves for behaving like children at such a ripe old age.

Thus, karaoke's role in promoting social support is more from the view point of providing a space where older people can come together to do something they enjoy mutually, and enabling friendship bonding to develop with the opportunities to meet regularly. Similar age cohorts and life experiences further promote the bonding. For older persons in general, informal karaoke gatherings at community clubs and club houses are common and have become an avenue to combat

loneliness and have fun, as well as to foster a network of social support among themselves. In a news report on the life of a 60-year-old kidney patient, his love for karaoke was highlighted as a key ingredient to keep him going for the past 18 years. Although his family has bought him a karaoke system at home, he still frequented the community club often to be in the company of 'karaoke friends' (The Straits Times, 9 September 1999).

Discussion

Leisure in the lives of older persons has received attention due to its impact on the well-being in later life. Leisure includes a multidimensional set of activities, relationships, contexts, and commitments (Kelly, 1983). Kelly's study of leisure among respondents in Peoria (USA) have shown that leisure provided meanings as a social space, a resource, a dimension of life, a complement to other roles, realm of personal and social identity, interpersonal and social support, a sense of achievement, a context for a redeveloped sense of self, and definition of worth and significance (Kelly, 1987).

The theorisation of 'serious leisure' proposed by Stebbins (1992), when focusing on its significance in enhancing the quality of life of older persons, proposes that it provides work like activity offering a link with former work associates, current friends, and relatives, expanding one's social circle, promoting transcendence, constituting a theme in the life review, fostering responsibility, and creating the opportunity to feel needed by other people (Mannel, 1993, p.131). Stebbin's proposal overlaps considerably with Kelly's and further offers a more precise classification or development of leisure that can become a serious pursuit when it requires investment of time, commitment in acquiring of a skill and knowledge in the field of the hobby one engages in. Such a conceptualization of serious leisure helps explain the pursuit of karaoke among older persons at the centres.

Karaoke also has other benefits. Besides linking with friends and expanding one's social circle, the act of singing, through the lyrics and types of songs chosen also promotes nostalgia and reminiscences about the past. Karaoke also helps to promote linking with the younger generations. As a family entertainment, karaoke brings together the young and old as they take turns to perform for one another. A

grandma or grandpa that can sing well invites praises from the younger generations and brings the generations closer.

As a serious leisure, karaoke also entails learning and development beneficial to the health of older persons. The need to learn how to read the lyrics on the screen helps improve one's reading ability. Many older persons who are marginally literate have sought to memorize the lyrics instead, which may help to enhance their memory. The centre director of Spring activity centre notes that older persons who come regularly to the centre find that their relationships with family members, especially daughter-in-laws have improved considerably. Karaoke further helps because now older persons are busy with learning how to sing and memorising the lyrics when they are at home, reducing the opportunities for conflicts with family members.

Finally, it is worthy to note that karaoke is unique that while it is adopted by the older generation as an activity, it continues to remain popular among the younger generations. This prevents karaoke from being labeled as only for the old, unlike other activities such as gateball originating from Japan which has from its onset been labeled as a 'game old people play' (Trophagan, 1998). However, while the future cohort of older persons' commitment in karaoke may be more agreeable to Atchely's (1983) proposition that one's lifestyle and activity will continue into later life, for the present cohort of older persons, the theory does not necessarily holds. As older persons from the activity centres revealed, karaoke is a new pursuit to them. As many are typical of the older generations in Singapore, who have lived in economic hardship in the past where they could not afford any leisure, karaoke represents an avenue for a new 'leisure' identity (Thang, forthcoming). However, due to its sedentary nature (usually standing or sitting to sing, although very few may dance with the music), it is hoped that karaoke will constitute one of the activities, but not the only activity older persons engage in. Whether it is a deliberate attempt to become serious with karaoke, or (more likely) a chance encounter that led to the discovery of karaoke as enhancing the life satisfaction in later life, from the various benefits of karaoke, we can expect more older people to take up karaoke as a leisure activity in Singapore, and for karaoke competitions and classes to remain in high

demand among older persons who have the time, resources and energy to invest in it as a serious leisure.

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ENDNOTES

1. Statistics from Pioneer, one of the biggest manufacturers in karaoke machines, shows that the percentage of household ownership in Laserdisc karaoke system has increased from 9% to 43% from 1992-1996.

2. Life expectancy in year 2000, cited from <http://www.singstat.gov.sg/papers/snippets/life.html> (Accessed 25 January 2006). The current age of retirement is age 62 in Singapore, with plan to increase finally to age 67 over the years.
- 3 Psudonyms are used in the paper. Data for the paper were collected primarily between early 1999- mid 2001. Additional data were collected for Spring activity centre in mid 2003.
- 4 There are 105 community clubs/centres in the island which provides recreational and educational programs for residents, as well as to serve as a channel for communication of policies to local level (Seah, 1973:12).
- 5 At Golden activity centre, members pay \$30 a month or \$75 for three months. At Spring activity centre, members pay \$80 a month.

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Perceived and Real Body Fatness in Older Asian Indians

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ABSTRACT

The aim of this cross-sectional study was to investigate body fatness, perceptions of weight status, and common strategies used to control weight in two groups of older Asian Indians. Participants were older Asian Indian adults living in middle-class areas of New Delhi, India (N = 147, mean age = 64.6 ± 2.7 years) and Auckland, New Zealand (N = 112, mean age = 67.5 ± 7.6 years). After recruitment from community groups, physical measures (height and weight) were taken and questions pertaining to perceptions of weight status and weight management strategies employed in the last month were administered. Both groups showed a high prevalence of overweight and obesity using ethnically adjusted BMI cut-points. The New Delhi sample demonstrated less overweight and obesity (40.1% normal weight, 38.8% overweight, and 21.1% obese) than the Auckland sample (29.9% normal weight, 48.7% overweight, and 20.3% obese). Although the

majority of both the Auckland and New Delhi samples were overweight or obese (69% and 60%, respectively), only a minority perceived that they were overweight (31% and 17%, respectively). Some were attempting to lose weight (19.7% Auckland, 8.8% New Delhi). All of those trying to lose weight were overweight or obese. In the previous month both diet and physical activity/exercise had been used to control weight by some in both samples. Diet as a weight management strategy was low (14.5% Auckland, 10.2% New Delhi). Exercise/physical activity was more popular, with almost half the Auckland sample (48.7%) and 38.1% of the New Delhi sample having used exercise in the previous month to attempt to control weight. Both samples of Asian Indians had a high prevalence of overweight and obesity, yet the majority perceived themselves to be of normal weight. For weight management programs to be effective, people first need to understand and correctly perceive their own weight status. We recommend education about weight status measurement as an important component in starting community and self-management programs.

Keywords : Obesity, Body mass index, Perceptions, Asian Indian, Nutrition

Obesity is one of the most significant health issues affecting our globally aging population. The World Health Organization has estimated that there is greater than 300 million obese people worldwide (World Health Organization, 2003), with increasing prevalence in both developed and developing countries. Prevalence of obesity is suggested to rise even further over the next 20 years and could reach 50% in the US, 40% in other developed countries such as the UK and Australia (International Union of Nutritional Sciences, 2003), and even higher in Asian countries. The rapid and substantial increase in the obesity problem, and its consequences on health and mortality, have contributed to recent suggestions that the steady rise in life expectancy over the past two centuries may soon end (Olshansky et al., 2005).

Obesity is integrally linked to poor nutrition and low physical activity. A recent review of physical activity rates in the US found that declining activity in relation to work, transportation, and home duties,

in combination with increasing sedentary activities such as television viewing are contributing to an overall trend of declining total physical activity (Brownson, Boehmer, and Luke, 2005). As well as low levels of physical activity, the increased availability of high density high calorie food is thought to be a major contributing factor to the development of obesity. Over consumption of such foods is implicit in weight gain, and weight loss usually relates to the reduction in the consumption of such foods.

Government and other health agencies worldwide are developing and adopting policy targeted at reversing these trends. In New Zealand, for example, the Healthy Eating – Healthy Action strategy (Ministry of Health, 2003) provides a framework to bring about changes in the environment in which New Zealanders live, work, and play, related to physical activity, nutrition, and ultimately obesity. The strategy responds to 3 of the 13 priority population health areas in the New Zealand Health Strategy (Ministry of Health, 2000) namely, increasing the level of physical activity, reducing obesity, and improving nutrition. Other health strategy documents such as the Health of Older People Strategy (Ministry of Health, 2002) also identify increasing physical activity and improving nutrition as national priorities.

In India health policy and intervention is less well developed, yet the prevalence of overweight and obesity is escalating rapidly. An accurate determination of the prevalence of overweight and obesity is difficult in such a large country, and is confounded by the use of varying definitions of overweight and obesity in the papers reporting prevalence data. In a recent review, however, Yajnik (2004), reported obesity rates of up to 72% (using waist : hip ratio) for urban dwelling adults in India.

The importance of investigating obesity, nutrition, and physical inactivity lies in their relationship to the development of many non-communicable lifestyle diseases such as coronary heart disease and Type 2 diabetes. Asian Indians are a particular population group at high risk of such diseases. Asian Indians have rapidly escalating prevalence of Type 2 diabetes and coronary heart disease. The prevalence of Type 2 diabetes in adults in urban India was less than 3% in the 1970's, but estimated to grow to greater than 12% in 2000 (Ramachandran et al., 2001).

In addition to Type 2 diabetes, the prevalence of coronary heart disease for urban dwelling adults in India increased from approximately 1% in 1960 to nearly 10% in 1995 (Gupta and Gupta, 1996). Further, it has been estimated that coronary heart disease will be the leading cause of death in adults in India by 2025 (Ling, and Rewers, 1998; Reddy, 1993). This phenomenon is not isolated to Asian Indians living in India. It has been reported that expatriate Asian Indians living in their new countries have far worse risk factor profiles (e.g., waist circumference, obesity) for cardiovascular disease and diabetes (Bhopal et al., 1999), and a far greater risk of developing coronary heart disease, than the local population or other immigrant groups (Balarajan, 1991, Dhanjal, Lal, Haynes, and Lip, 2001; Palaniappan et al., 2002; Sheth, Nair, Nargundkar, Anand, and Yusef, 1999; Vardan, Mookherjee, Vardan, and Sinha, 1995). Several risk factors coronary heart disease and diabetes in Asian Indians living in countries other than India have identified. These include physical activity levels, sedentary pursuits, cultural issues concerning stress and acculturation, environmental and lifestyle changes, nutrition, and obesity (especially central adiposity) (Dhanjal et al., 2001; Kalra, Srinivasan, Ivey, and Greenlund, 2004; Mahajan and Bermingham, 2004).

New Zealand has experienced sizable migration from India over the past 25 years, with Asian Indians making up close to 2% of the population (an increase of greater than 100% over 10 years (Statistics New Zealand, 2002). A large majority of Asian Indian immigrants to New Zealand live in Auckland (Abbott, Wong, Williams, Au, and Young, 2000). Despite the recent growth of the Asian population in New Zealand, little health information and health policy has been developed for this group. The effectiveness of strategy, policy, and intervention programs developed for any population or sub-population group to manage obesity must first understand whether people in that population even perceive they have a weight problem and the prevalence of physical activity and nutrition strategies employed to manage weight in the that population.

The extent to which people perceive themselves as overweight or obese compared with an objective measurement has been examined in several studies. In a Spanish study (Gutierrez-Fisac, Lopez Garcia, Rodriguez-Artalejo, Banegas, and Guallar-Castillon, 2002) almost a

quarter of overweight or obese adults did not perceive themselves to be overweight or obese. Older adults were less likely than others to perceive themselves to be in the correct weight category. In a study of Australian adults (Donath, 2000), it was shown that 49.3% of men and 72.0% of women perceived themselves as being overweight when in fact they were through BMI status. Misperception was more common amongst men and older women. No studies have looked at this phenomenon specifically in Asian Indians.

Given the high risk that Asian Indians have for coronary heart disease and diabetes and that Asian Indians with a relatively slight frame may have high levels of body fat, the aim of the current research was to assess real and perceived body fatness of separate samples of older Asian Indian adults living in India and migrant Asian Indians in New Zealand. As well, the strategies most commonly used to manage weight (physical activity/exercise, diet) will be investigated.

Methods

Participants

Participants were recruited from Asian Indian community groups for older adults. Table 1 shows the demographic characteristics of both the Auckland and New Delhi samples. The Auckland sample was older and had a wider age range than the New Delhi sample. For the Auckland sample, males (Mean age = 70.3 years, SD = 7.3) were older on average than females (Mean age = 65.8 years, SD = 6.7). All Auckland participants had emigrated from Asian Indian countries (e.g., India, Sri Lanka, Pakistan, Fiji) with the majority (74%) from India. The average time in New Zealand since immigration was 51 months (SD = 47, Range = 1-214). For the New Delhi sample males (Mean age = 64.3 years, SD = 2.9) and females (Mean age = 64.8 years, SD = 2.4) were not significantly different in age.

Table 1 Gender and age for the total sample

	Auckland, New Zealand	New Delhi, India
	(N = 112)	(N = 147)
Males	50	81
Females	62	66
Age (years)	Range = 44-91	Range = 59-73

Mean = 67.5
(SD = 7.6)

Mean = 64.6
(SD = 7.3)

Measures

Adiposity Measures

Height without shoes, weight in light clothing, and waist circumference at the midpoint between the lower rib and upper iliac crest in the mid axillary line were measured to understand health risk by body mass index (BMI) and central adiposity.

Lifestyle and Health Questionnaire

A questionnaire was developed which requested information on demographics including gender and age. Perception of weight status was collected to understand whether participants in different weight categories (especially higher weight categories which are a risk of chronic disease) actually perceive themselves to be in these categories.

Procedure

Those interested in participating (approximately 90% of those in attendance at the usual weekly meeting of the community groups) provided informed consent before having their anthropometric measures taken. All questionnaires were administered in English with one of the research team (NKC) available to translate any questions into Hindi on request. Verbal instructions and explanations were given in both English and Hindi. This study was approved by the Auckland University of Technology Ethics Committee.

Statistical analysis

Data were coded and entered into SPSS V12 for windows for analysis. The study was cross-sectional. As such, descriptive statistics were used to understand the overall perceptions of their weight status and the strategies they employed to manage their weight.

Results

Overweight and obesity

BMI was calculated as a gross measure of body composition and was used to understand body composition as a health risk. Figure 1 shows the percentage of the sample classified as normal weight, overweight, or obese using two different sets of cut-off points: the first

being that typically used for European populations where a BMI of greater than 25 kg/m² indicates overweight and greater than 30 kg/m² indicates obesity and the other being specific to Asian Indian populations where a BMI of 23 kg/m² and 25 kg/m² indicate overweight and obesity, respectively (World Health Organization Expert Consultation, 2004). From Figure 1 it is clear the majority of Asian Indians studied were either overweight or obese regardless of cut-off points used. Less than one quarter of both samples were of a normal weight using ethnic specific cut points. The overall level of overweight and obesity was similar in both samples. However, the Auckland sample showed a much higher prevalence of obesity than the New Delhi sample.

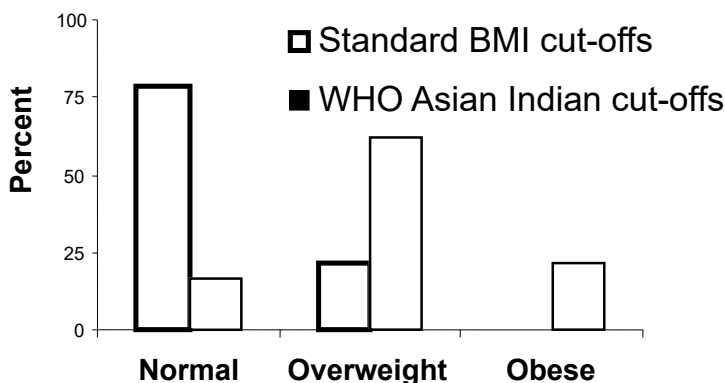


Figure 1: Percentage of the sample classified as normal weight, overweight, or obese using both standard BMI cut-offs and Asian Indian specific cut-offs for the Auckland sample (upper panel) and the New Delhi sample (lower panel)

Perceptions of weight

Data were collected on participants' perceptions of their weight status and whether they were presently using any strategies to manage their weight (refer to Table 2). Using the Asian Indian specific cut points described earlier, a minority in both samples who were in fact overweight or obese thought they were overweight. Only 19.3% of the overweight or obese New Delhi sample agreed that they were in fact

overweight. Interestingly, of the total New Delhi sample the proportion of those who considered themselves overweight was around 20% regardless of the actual weight status. Even a proportion of those who were in fact underweight considered themselves overweight. For the Auckland sample, perceptions were closer to reality with more of the sample who were overweight or obese actually realising that weight was a problem than those who were normal or underweight. Even so, perception and reality were separated in the majority of the sample.

Table 2 : Summary of the perceptions of overweight, those trying to lose weight, and exercise and diet strategies to control weight for the Auckland and New Delhi samples.

	Total Sample		Overweigh/obese portion of sample	
	Auckland	New Delhi	Auckland	New Delhi
Regard themselves as overweight	30.8%	17.7%	39.1%	19.3%
Presently trying to lose weight	19.7%	8.8%	25.0%	10.2%
Used diet in the last month to control weight	14.5%	10.2%	18.3%	12.5%
Used exercise in the last month to control weight	48.7%	38.1%	53.8%	30.7%

Only a small proportion of the sample was presently trying to lose weight. More people in the New Delhi sample were trying to lose weight than the Auckland sample. Especially interesting was that, in both samples, less of the people who were overweight or obese were trying to lose weight than those who were not.

When participants were asked if they had used diet or exercise to manage their weight in the last month it was clear that exercise was the more popular strategy, with about 50% of each sample engaging in such a strategy. For the overweight and obese portion of both samples both diet and exercise were used less as a strategy than those of normal weight.

There were no significant gender differences in any of these behaviours or perceptions in either sample.

Discussion

The findings from this study highlight the high level of overweight and obesity in a sample of older Asian Indians living in urban New Zealand and urban India. When considering ethnic-specific cut-off values, over two-thirds were classified as obese.

Comparing the Auckland sample to other older New Zealanders, this group had a much higher prevalence of obesity. The 2003 New Zealand Health Survey (Ministry of Health, 2005) showed that, in a representative sample of more than 10,000 people, 38.3% of 65-74 year olds were overweight with a further 28.0% obese. For the New Delhi sample a comparison group is not available.

Despite a high incidence of overweight and obesity in this sample, the majority did not perceive themselves as being overweight. This phenomenon raises a considerable challenge in terms of behaviour change intervention. Perceptions of what is deemed a “healthy” body weight and size may vary between individuals and population groups. This demonstrates the importance of weight management interventions including education regarding body size measurements, perceptions, and associated health risks alongside strategies and support.

Of note, while a majority of participants did not perceive themselves as overweight, some had still made efforts through either dietary changes or increased physical activity to manage their weight. Exercise was the most popular strategy for both samples, but more popular in New Zealand.

There were some other interesting differences between the samples. Despite both groups showing a large proportion of people whose perception was not in line with the reality of their weight status the problem appeared worst for those Asian Indians residing in India. The reasons for this were beyond the scope of this study, however, warrant further investigation. It is likely that a more detailed sociological investigation of the factors associated with weight misperceptions may result in information which informs intervention to make Asian Indians aware of the risk their weight status confers to their health. Of any ethnic group Asian Indians might be expected to have the biggest gap between perception and reality because of a slight frame size and low muscle mass in comparison with other ethnic groups. For a given total body volume it is likely that an Asian Indian

will have a higher fat mass than other ethnic groups especially those of European and Pacific descent. As such, this is a group which deserves particular attention in health education regarding knowledge of personal weight status in regard to health risk.

The findings from this study should be treated with some caution because the convenience sampling procedure resulted in a non-representative sample. While a more representative sample would have been ideal, the two largest Asian Indian community groups for older adults in Auckland participated in the study. It was thought this would provide an adequate depiction of body fatness and physical activity patterns of this population. For the New Delhi sample a similar community group was used for recruitment but there may be differences between countries in the types of people attracted to such groups.

The present study identified a high prevalence of risk for lifestyle related diseases, particularly through high body fatness in older Asian Indian immigrants to New Zealand and in those residing in India. Of particular concern, is the fact that many of those at increased risk did not perceive themselves to be overweight. Clearly, many in this population stand to gain from both weight reduction either through increased physical activity participation and better nutritional habits, however, a considerable challenge exists in terms of altering perceptions of what is deemed healthy.

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Healthy Aging: Genes and Environment

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ABSTRACT

With aging the incidence of lifestyle diseases increases. This is not a sudden onset phenomenon but an accumulation of changes in the expression of genes in response to nutrition and environment from conception. Ethnic and therefore genetic differences confound the relationships between phenotype and genotype. For the same body size Indian people have more fat and less muscle than other ethnic groups. People of Indian origins worldwide are at increased risk of cardiovascular disease and Type 2 diabetes mellitus as they age. Accumulation of central body fat is one risk factor. This paper discusses the possible aetiology of disease, opportunities for reduction of risk throughout the lifecycle and also looks at reduction in risk in the elderly with reference to a migrant Indian population in New Zealand.

Keywords : Aging, BMI, Fat distribution, Disability, Foetal origins, Lifecycle

Worldwide as people get older the prevalence of lifestyle diseases increases and the importance of disability at end of life years becomes more meaningful (Murray & Lopez, 1998). With better understanding of the foetal origins of disease and also the interactions of nutrition, physical activity and stress in the aetiology of disease throughout life the question of what to do and when becomes more important – if not

for an individual or groups health but for the health of future generations. Genes that are inherited from both parents are important in the health of child but also the health of the mother through pregnancy has a big impact on the environment in which the child grows.

The environment children now grow up in is not the same as fifty or more years ago and unfortunately to quantitate the impact of foetal and child hood health on the health of the elderly requires longitudinal studies. However, previous studies have shown that small British babies (Fall, Vijaykumar, Barker, Osmond, Duggleby, 1995) and large Indian babies (Fall *et al.*; 1998) are at more risk of cardiovascular disease and Type 2 diabetes mellitus (T2DM). Ethnic differences in body composition and proportions confound the understanding of the relationships between phenotype and genotype.

Obesity prevalence, defined as an increase in BMI is growing progressively even among older age groups. The definition of the cut-off for BMI to define obesity is difficult – it is known for the same height and weight that Indian people have more fat and less lean tissue than European (WHO Expert Consultation, 2004) but the relationship between fatness and risk for specific ethnic groups is not clear. While there is not a simple inverse relationship between fatness and health at any age or in any population group there is in the elderly some evidence that increased fatness in association with fitness and maintenance of muscle may be protective (Zamboni *et al.*; 2005). Increased bone mineral density in youth is also protective for osteopaenia and osteoporosis in later life and is also related to fatness and fitness (Seeman, 2002). Particularly in Indian central fat and relative loss of fat-free mass may become relatively more important than BMI in determining the health risks associated with obesity with aging.

Where does it all start?– From before the moment of conception and the first cell division the environment that the conceptus develops in influences the way DNA is expressed. The very large number of cellular divisions from egg and sperm to birth – at least 75% of the total that will occur in a lifetime – means that the potential for small differences to be amplified is present (Batesman *et al.*, 2005). Evidence for foetal origins of disease in Indian people has been reviewed by Yajnik (2004) and he argues clearly that the problem is

more than just accumulation of excess abdominal fat. During development a nutritional imbalance will result in prioritisation for brain development accompanied by less muscle growth and an accumulation of fat. The rate of growth during childhood also has an influence on future health (Fall et al., 1995). Adolescence is a particularly vulnerable time especially for women when activity levels appear to be reduced, fatness increases and there is often an adoption of vegetarian diets. For those who have a lifetime of vegetarianism or diets that exclude certain foods the risk of adverse health may rise. Similarly risk may also increase for those with a large intake of meat and dairy products.

Studies on the effect of voluntary weight loss in the elderly are scarce, but they suggest that even small amounts of weight loss (between 5-10% of initial body weight) may be beneficial (Zamboni et al., 2005). In older as well as in younger adults, voluntary weight loss may help to prevent the adverse health consequences of obesity (Diabetes Prevention Programme, 2002; Pan et al., 1997, Tuomilehto et al., 2001). How the weight loss is brought about and sustained is important particularly with insidious onset of other disabilities e.g. failing sight that occurs with aging. Changes need to be in the context of the normal activities of daily living. In New Zealand a small study of lifestyle change in older Indian people (N=41 aged 38-74y) over 6 months has shown that lifestyle change mediated in a group setting resulted in reduction in both central and total fat measured by dual X-ray absorptiometry and improvements in lipid profile but not in insulin sensitivity or resistance (Rush, unpublished data, Figure 1). Men achieved bigger changes than women. However the method of weight loss needs to be considered carefully so that nutrient deficiencies do not arise and physical fitness is promoted.

The important point is that it is possible to reduce risk factors at any age. Three large studies in Finland (Tuomilehto et al., 2001), China (Pan et al., 1998) and the United States (Diabetes Prevention Programme, 2002) have shown reduction of the incidence of new cases of T2DM through lifestyle changes (including weight loss) in the order of 5-10%. Small changes in a population make a big difference to overall health of the population (Rose, 2001) so if the change can be made on a group and community basis then it is more likely to be

beneficial to future generations. It also will not cost as much as intensive 1:1 counselling.

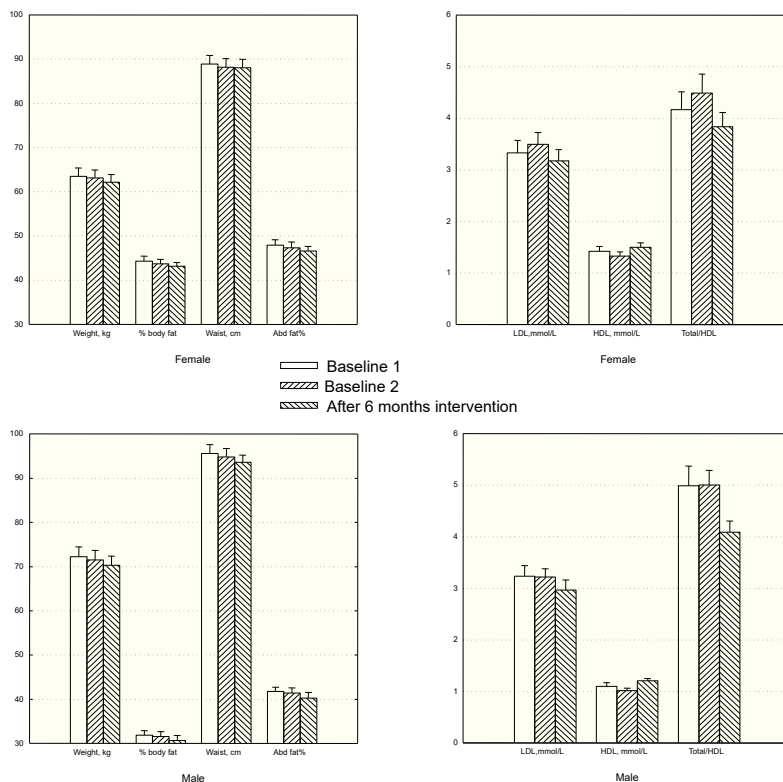


Figure 1 Changes in anthropometric and fasting lipid risk factors – two baseline measures then a follow-up measurement after 6 months intervention in Females n=20 and Males n=21 (Rush, unpublished data) All measures shown at 6 months were

significantly improved ($P < 0.05$) except for weight and LDL in women.

Older people do not have as much potential to effect change in health risks and the simple message to reduce weight may be harmful. But obesity prevalence, defined as an increase in BMI is growing progressively even among older age groups. Knowledge of age-related body composition and fat distribution helps to better understand the relationships between obesity, morbidity and mortality in the elderly. Review of the literature supports that central fat and relative loss of fat-free mass may become relatively more important than BMI in determining the health risk associated with obesity in older ages (Zamboni et al., 2005). In a cross-sectional study of 223 healthy Asian Indian migrants in New Zealand (aged 17-69y and average of 9 years in NZ) we observe that with increasing age height is decreased, weight does not increase but BMI increases (Rush, unpublished data) similar to the trends in other ethnic groups. But by ethnicity there are large differences in body proportions and fat and muscle distribution (Rush et al., 2004) in people living in the same environment supporting genetic differences.

Change is possible and it is never too late to start. Complacency is not an option as the environment continues to promote physical inactivity, high energy foods which may be nutrient poor and high levels of stress. The challenge is to take the scientific knowledge and translate it into action at the community level particularly in high risk groups.

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A Case Study Reflecting Healthy Aging in the U.S.

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ABSTRACT

This paper explores the concepts behind activity theory and continuity theory as they relate to healthy aging and independence. Messages from the U.S. Administration on Aging (AoA) and the World Health Organization relative to successful and healthy aging will be presented. A brief look at aging in European countries will also be explored. A case study will then be used to depict healthy aging that models concepts from both activity and continuity theory and the use of "life competencies" as an illustration of how to age well.

Keywords : Activity, Older Adults, Ageing, Activity Theory, Continuity Theory

When exploring gerontology in the early 1960s, *activity theory* portrayed the image of an older person who had maintained vigour and social involvement despite the aging process. *Disengagement theory* was an opposing perspective that portrayed an old person who had voluntarily and gracefully disengaged from the hectic activity of midlife to a more serene and satisfying contemplation of life from a distance (Tobin, 2001). *Continuity theory* was also developed during this time and began with the observation that despite widespread changes in health, function, and social circumstances, a large

proportion of older adults show considerable consistency over time in their patterns of thinking, activity profiles and social relationships (Atchley, 2001). One dimension of the proclamation for healthy aging made by AoA includes exercise and nutrition. This article will describe *activity theory* and *continuity theory* in more detail, however, not dismissing the literature that suggests that disengagement theory has a place in assessing various behaviours of older adults (Adams, 2001). Robert Havighurst and his colleagues at the University of Chicago were the first to put in writing what other practitioners assumed: keeping active was a satisfying way to enjoy old age. The older person who ages optimally is the person who stays active and who manages to resist the shrinking of their social world. They maintain the activities of middle age as long as possible, and then finds substitutes for those activities that they need to relinquish – substitutes for work when they retire and substitutes for friends or loved ones whom they lose by death (Havighurst, Neugarten & Tobin, 1963). *Activity theory* suggests that activity produces successful aging through the relationship between activity and life satisfaction or subjective well being; activity level is the cause and life satisfaction is the effect (Atchley, 2001)

Continuity theory is a social-psychological theory of continuous adult development (Atchley, 1999). *Continuity theory* makes an assumption that individuals invest themselves in the internal and external frameworks of their lives, and these frameworks allow them to accommodate a considerable amount of evolutionary change without experiencing crisis. *Continuity theory* suggests that the personal systems that individuals have spent their lifetimes developing seem to offer the highest probability for successfully constructing their future. If the continuity strategy for making plans is positively reinforced, continuity becomes an increasingly strong first choice for older adults (Atchley, 2001).

Promoting Healthy Lifestyles

Improvements in medicine, public health, science and technology have enabled today's older Americans to live longer and healthier lives than ever before. There is a mutual desire between older adults and society: Older adults want to remain healthy and independent at home and society wants to minimize the health care and economic costs associated with an increasing aging population. Health

promotion and disease prevention activities and programs are an increasing priority for older adults, their families, and the health care system. Studies by the National Institute on Aging indicate that healthy eating, physical activity, mental stimulation, maintaining a safe environment, social support and regular health care are important in maintaining health and independence (Administration on Aging, 2005).

The Administration on Aging (2005) advocates for physical activity and nutrition as part of a healthy lifestyle. Unfortunately, inactivity often increases with age. Surveys show that by age 75, one-in-three men and one-in-two women are not physically active. Physical activity can help older adults prolong their independence and improve their quality of life. Physical activity can also improve mood and relieve depression. Staying physically active on a regular, permanent basis can help prevent or delay certain diseases (such as some types of cancer, heart disease, or diabetes) and disabilities, as people grow older. In addition, regular exercise can even improve management of some diseases and disabilities in older adults.

Nutrition remains important throughout life. Many chronic diseases that develop late in life, such as osteoporosis, can be influenced by earlier poor habits. Insufficient exercise and calcium intake, especially during adolescence and early adulthood, can significantly increase the risk of osteoporosis, a disease that causes bones to become brittle and crack or break easily. Good nutrition in the later years, however, still can help lessen the effects of diseases prevalent among older Americans (e.g., osteoporosis, obesity, high blood pressure, diabetes, heart disease, certain cancers, gastrointestinal problems, and chronic under-nutrition) and/or improve the quality. Studies show that a good diet in later years helps both in reducing the risk of these diseases and in managing the diseases' signs and symptoms. This contributes to a higher quality of life, enabling older people to maintain their independence by continuing to perform basic daily activities, such as bathing, dressing and eating (U.S. Food and Drug Administration, 1996).

During the second United Nations World Assembly on Aging, the World Health Organization defined healthy aging and active aging as the central aim of health promotion and disease prevention. Disease prevention is defined as the process of optimizing opportunities for

health, participation and security in order to enhance quality of life as people age” (World Health Organization, 2002). Fernandez-Ballesteros (1996) defines a multidimensional understanding of optimal aging as a theoretical construct integrating contemporary research on aging well, successful aging, competent aging, productive aging or active aging as well as recommendations of the World Health Organization to promote psychological and behavioural determinants of active aging (Kruse, 2005).

Fernandez-Ballesteros (1996) suggests that population aging is challenging to European communities since increases in life expectancy might also imply increases in years of disability and incurred costs. However, there is empirical evidence that supports the ability to continue learning as well as the significance of personal habits and lifestyles suggesting that the implementation of effective preventative measures might contribute at least to some extent to a compression of morbidity.

Kruse (2005), a German researcher, refers to experiences, strategies, and knowledge systems that people have acquired in earlier phases of the life span as “life competencies.” Life competencies are built up in the context of effective coping and enable people to maintain or re-establish a personal satisfying perspective on their life when confronted with serious problems, tasks, and challenges in later years. Building up life competencies earlier in the life course is essential for successful development in advanced age (e.g. effective coping with demands of life in old age, including practical and psychological as well as interpersonal and ethical challenges). Consequently, the understanding of life competencies is not limited to the experiences, strategies and knowledge systems acquired in the context of occupational activities; rather, they are also reflected in ethical judgments and voluntary activities as well as in the willingness and readiness to assume responsibility for self, others and society.

Older people remaining active within their communities has become a growing interest in the study of aging. As the population ages in the U.S. and around the world, it is important to continue to emphasize physical activity and good nutrition as well as maintaining social supports and other healthy lifestyle choices.

The Impact of Life Long Skills on Healthy Aging

The case study that will be presented in this paper illustrates the importance of physical activity, nutrition and wise lifestyle choices as one is aging across the life course. The degree to which they are integrated into the later years can positively correlate with the ability to effectively cope with the expected or unexpected demands of life in old age.

The following account describes how the professional, psychological and physical competencies and characteristics developed in mid life through professional and personal experiences impacted the unanticipated events I confronted in the 70th year of my life. It was during this year that I experienced multiple challenges to both my professional future and to my physical endurance.

Aging and a professional challenge

At age 70, after 25 years as an activist and pioneer in the development of intergenerational studies, I decided to retire from my academic work at the University of Pittsburgh, where I was founder and director of Generations Together (an Intergenerational Program of the University), researcher at the University Center for Social and Urban Research, and a faculty member of the School of Education. During more than two decades of commitment to this work, I honed multiple skills in program development, management and administration, implementation of research projects, teaching and supervising students and coordination of training initiatives involving students, community members, practitioners and faculty. Engagement in diverse aspects of this work provided many opportunities to write about the development of this field, its effect on participants and on the community and its impact on students and faculty from multiple disciplines. Throughout these 25 years, I was conscious of my own growth and learning and the importance of sensitivity to and understanding of the similarities and differences in participants, programmers, students, faculty, administrators and policy makers involved in this field.

Though I continued to have a commitment to colleagues, students, the community, and the future of this growing field, at 70 years of age I decided it was time to pass the gauntlet to the next generation and to continue my contribution to this work on another level. The psychological challenge was how to let go of Generations Together that had become a major part of my life. I had to accept the

leadership skills and commitment of my successor, who would continue the work of this unique university program. I was ready to leave Generations Together to the team of professionals who were responsible for its future.

In preparation for this separation, I accepted a new challenge that would enable me to work in this field in a significant role with an international focus. Immediately following my official retirement, I accepted the offer from Haworth Press Inc. to become the founding editor of the *Journal of Intergenerational Relationships* (JIR). The responsibilities and tasks associated with the creation and development of this first international intergenerational journal were daunting.

This new role at age 70 demanded that I link some of the skills and insights developed as a program administrator, researcher and academic with new skills needed to create a journal whose goal is to become a vehicle for global exchange of intergenerational ideas. Some of the skills I developed during the previous 25 years would serve as the foundation to guide in the creation of the journal format, to develop an effective international editorial board and to find and engage authors and subscribers who would become involved in the journal. As I embarked on my new responsibilities as journal editor, I realized that commitment, motivation, effective decision-making skills, and understanding of people learned in my professional experiences would be valuable in helping to meet the goals of the *Journal of Intergenerational Relationships*.

Developing skills in computer technology would enable me to work effectively with the diverse editorial board members, external reviewers and authors from 15 countries. Though I was not able “to think like a computer,” a rewarding and productive intergenerational partnership was developed with my young, computer-savvy, editorial assistant and I became competent enough to integrate my management and people skills with 21st century technology.

JIR was to become the quarterly journal that enabled practitioners, academics and researchers from across the world to publish their work in the emerging global field of intergenerational practice and study. As each issue of the journal was prepared and well received by the publishers I experienced a sense of pride and accomplishment. Any psychological reservations about this new challenge were replaced by acknowledgment. The journal had a

mission that was supported by the publishers and our international board of professionals from 14 countries. I was stimulated and rewarded by colleagues who shared my enthusiasm and commitment to the growth of JIR and by the young editorial assistant who was also challenged and rewarded by this work and provided the technical skills that resulted in the preparation of on-time and well-designed issues. The chronological age of 70 did not seem to diminish the excitement of this new professional challenge.

Aging and a physical challenge

While I recognised that commitment to my professional life is integral to quality of life, I also acknowledged and valued the importance of physical well-being that enhanced the ability to function effectively in the work place, and to maintain positive and meaningful relationships with my family. My physical well-being was maintained through healthy eating, a routine of exercises, planned experiences in the outdoors, and the ability to couple the exhilarating effect of nature with peaceful reflections.

In addition to a weekly schedule of walking and exercising in a local health club, for the past several decades my husband and I have spent several weeks each summer challenging our physical and emotional abilities by hiking in the beautiful and unique canyons of Utah in the US. The exquisite colour and texture of the rock formations stimulated my aesthetic sense and challenged my physical competence. And so, the rite of passage for my 70th birthday was to be celebrated by experiencing the unique physical challenges of hiking in a special remote canyon of Utah.

With my husband and a small group of intrepid friends we approached the challenge of the canyon with walking sticks to help negotiate the fractures in the rocks, sturdy shoes to ensure the accuracy of each step, sun block to protect the skin from the sun's scorching Ultra Violet Waves and wide brimmed hats and sun glasses to subdue the glare. To fully enjoy and meet the challenge of this experience required a profound love and respect for this environment, physical endurance, a body supple enough to jump from boulder to boulder and flexible enough to squeeze into narrow crevices or negotiate the brush and tall grass. On a typical canyon hike, all the senses are engaged, all the muscles are activated, the limbs are stretched and there is a sense of harmony between the body and the natural environment. This trip

that was to celebrate my 70th birthday, resulted in an unanticipated physical challenge.

During the 3rd hour of our hike in this remote canyon I experienced discomfort in my chest accompanied by weakness, sweating and unquenchable thirst. Drinking frequently from the water bottle did not mask the increasing pain in my chest and my arms. An infusion of sports drinks to replace the electrolytes that I may have lost did not alleviate the weakness. It was clear some systems in my body were in trouble and, despite my motivation to continue, my body was in need of help.

As the discomfort became intense pain in my chest, my limbs lost their ability to respond. I slowed my pace, stopping frequently for large quantities of water, and support from my husband and our friends. With some difficulty, I was able to find my way to our campsite. A park ranger who was alerted to my distress by other hikers visited our campsite that evening and found me resting and enjoying the shade of the cottonwood trees. The physical pain had abated and, though still weak, I presumed my body was ready to continue the next day.

This, however, was not to be. The following day the pain was intensified and I was unable to walk without pain. It was clear medical care was needed and we drove to the nearest hospital - about 50 miles away from our oasis. The resident medical doctor (MD) on duty that Sunday in a small rural hospital was familiar with orthopaedic problems related to hiking and skiing accidents. After a cursory examination and a phone call to my nephew (an MD in Los Angeles, California), it was agreed that that this older lady in shorts and hiking boots was indeed experiencing a heart attack. They were unable to treat this condition in this hospital and called for a helicopter to take me to a larger hospital in Salt Lake City, Utah. I soon found myself in a three-passenger helicopter in a confined space, wearing an oxygen mask and strapped to a stretcher, along with an emergency nurse and the pilot.

We made our way over the Rocky Mountains and descended onto the helipad of the hospital. The experience resembled a James Bond movie, as the medical team quickly moved the stretcher to the hospital bed where I was met by an imposing 50+ year-old MD who asked my permission to administer a procedure to determine the status of my

heart. With pen in hand, uncertain of the outcome, I gave permission. My husband was not present to advise me since there was no room for him in the helicopter.

I soon found myself looking at the bright lights in the operating room and hearing voices instructing me to look at the monitor that showed the trajectory of the catheter examining my heart. In a semi-alert state, I heard voices utter the following words: “What a strong old horse”, followed by “look at the babies! How wonderful”. These comments by the team of doctors working on my body were confusing until the next day when I, along with my husband, family, and friends, waited for the cardiologist to discuss the events of the previous day.

The senior cardiologist appeared and said I was in good condition considering my age (healthy old horse). Because I was in good physical condition the collaterals (the babies) that developed following each earlier episodes of angina (warnings of a future heart attack) were able to connect to a healthy artery now that the ailing artery had died (the heart attack). The connection of the collaterals (the babies) to a healthy artery enabled the heart to function effectively. In other words, because I was so physically active, my ailing artery grew healthy branches that enabled my heart to continue to function after the attack.

This physical challenge at age 70 highlighted the importance to vital (healthy) aging of personal characteristics developed earlier and maintained into later life. And what characteristics I think played a role in my ability to grow the “babies” and recover from this stressful experience? Perhaps it was my commitment to my family, the need to watch my young grandchildren grow and the realization that I must be disciplined. I was committed to a regimen of walking and exercise; and maintained a watchful diet low in salt, low in fat and predominantly consisting of vegetables, fruit, nuts and fish. I maintained my hobbies such as reading, skiing, travelling and music including playing classical piano, a skill I developed in my youth. I shared these interests with my husband who was compulsive about health-related issues, a knowledgeable devotee of Opera and other forms of classical music and an avid skier and world traveller. Most of all I had an unswerving love for my family: two married children, two small grandchildren and my husband of 45 years.

In summary I would like to reflect on some personal skills and characteristics I carried into my 70th year of life that enabled me to

face the new professional challenges and tasks as founding editor of the Journal of Intergenerational Relationships and the physical challenges in coping with a life threatening experience.

Though some of these competencies and characteristics may be unique to this writer, it is my belief that the adaptation in older years of competencies and personal characteristics developed in earlier adult experiences can contribute to vital aging for all who want to remain engaged, active and productive. The professional competencies I found relevant for my healthy aging are:

- Commitment to my work in the intergenerational field of practice and study;
- Motivation to overcome challenges;
- Respect for the initiative and commitment of others;
- Understanding of the universality and global relevance of intergenerational work;
- Sensitivity to the diverse definitions and application of intergenerational work;
- Importance of inclusiveness that embraces the voices of persons with diverse skills and backgrounds;
- Ability to effectively collaborate with persons from diverse cultural orientation and technical skills;
- Remaining open to learning new skills;
- Recognizing the connections between the past, present and futures and
- Understanding the global value of intergenerational exchange and relationships.

The personal characteristics I found relevant are:

- Ability to remain calm in an unanticipated traumatic situation;
- Positive mind set about the ability to survive;
- Healthy physical condition that enabled the body to repair itself;
- Motivation to continue the life style of the past two decades;
- A Caring family that was present to encourage my recovery;

- Caring about my young grandchildren and wanting to see them grow and
- An awareness of how much more I wanted to do in my life.

Summary

The case study described above sounds like a “textbook case” that was made-up to illustrate a mix of concepts from activity theory, continuity theory and the depiction of life competencies instead of a real-life account. Physical activity, good nutrition and other healthy lifestyle choices have enabled “Sally” to **continue** to enjoy a quality life similar to what she experienced 25 years ago. Her professional responsibilities are different but she has chosen to replace them with similar tasks. Sally may have to take her love for physical activity at a different pace but she is able to maintain being **active**. The case of “Sally” should be used as a learning tool in the classroom as well as an example to the young and old to continue (or begin) making their healthy lifestyle choices that can be maintained throughout their lives.

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Bridging Generations: Intergenerational Strategies for Healthy Ageing

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ABSTRACT

Intergenerational programmes and public policies are gaining status as credible strategies to address issues of concern in the USA and around the world. As the population ages and experiences a longer lifespan, many people are also enjoying greater health during these years. However, healthy ageing begins well before one enters older age. Preventative measures and efforts to combat chronic disease can benefit two or more generations when employing intergenerational strategies. While there is limited research in this area, the growing pool of programmes and evaluative studies conducted gives guidance for those concerned factors that impact healthy ageing including increasing obesity, depression, and unexpectedly raising a second family. This article will discuss intergenerational programmes as interventions, leading to healthier behaviours and healthier ageing.

Keywords : Intergenerational programmes, Grand-families, Health and wellness, Mental health

Changing Demographics Support the Need for Intergenerational Programs

Life expectancy in the United States increased from forty-seven years in 1900 to seventy-six years in 1999. By the year 2050, it is expected to climb into the eighties. In addition, by the year 2030, the number of people over the age of sixty-five is expected to double to seventy million (Hobbs & Damon, 1996). The majority (51%) of baby boomers say they expect to devote more time to community service or volunteering after retirement. (Roper, 2004) Life expectancy is increasing while at the same time older adults have access to improved health care and continuing to live independently. In 2000, only 4.5% of the older adult population resided in nursing homes (Administration on Aging, 2003).

Eleanor Guggenheim said it best when she addressed the opening event for the United Nations 1999 Year of the Older Person: Towards a Society for All Ages in New York City. In her 80s at the time, as she took the podium she said she had a real interest in this whole senior citizen thing...her son was about to become one.

In spite of the progress, the majority of older Americans do not appear to be taking responsibility for their own healthy ageing. The Centers for Disease Control's Behavioral Risk Factor Surveillance System (BRFSS) data show that the percentage of older adults who meet the recommended level of physical activity increased only modestly from 1988 to 2000 and is still relatively low. In 2000 the percentage of men over 65 who met the minimum requirement was 35.1% and among the same age group of women it was 26.6%. The data suggest older adults, in particular women, could benefit from increase levels of physical activity (Merck Institute of Aging & Health, 2004).

On the other end of the age spectrum potential and problems exist as well. Young people in the United States are more engaged in their communities than ever before. Fifty-one per cent of teenagers between the ages of 12 and 17 volunteer and 70% of teens participate in activities to improve their communities (Independent Sector, 2002). However, they too, are experiencing unhealthy changes. Since the 1970s the number of children considered overweight or obese doubled from 15% to 30%. This leads to obesity-related health conditions such as high blood pressure, early symptoms of hardening of the arteries, type 2 diabetes, non-alcoholic fatty liver disease, polycystic ovary

disorder and disordered breathing during sleep (Future of Children, 2006).

Across the lifespan, mental and physical health is affected by the presence, absence, and quality of ties to other people (Cohen, 2004). Like their older counter parts, the young are seeking meaningful involvement and purpose in their lives. That purpose can be fulfilled when people are engaged in intergenerational programmes, whether serving another generation or working side by side to better the world they share. When those programmes involve physical activity and learning about healthy lifestyles, the need for connection and purpose can coincide with better health outcomes.

History of Intergenerational Programs

Intergenerational is defined in the American Heritage Dictionary as “being or occurring between generations.” According to the International Consortium of Intergenerational Programmes (ICIP), intergenerational programs are “social vehicles that create purposeful and ongoing exchange of resources and learning among older and younger generations” (www.icip.org). Intergenerational programming in the United States began in the 1960s as a part of the government’s Office of Economic Opportunities War on Poverty. There was growing concern that economically disadvantaged older adults were becoming isolated and increasingly cut off from younger generations. The Foster Grandparent Programme, launched in 1965, recruited low income older adults to work with young children with special or exceptional needs. The “grandparents” received a stipend and health care in exchange for their service. Evaluations demonstrated that the programs not only provided the “grandparents” something to keep them busy, but they benefited in other ways as well. One ten-year study by the University of California at Irvine found that Foster Grandparents had more complex brain activity, better memory, and better sleep patterns than before they became involved in the programme and they demonstrated gains compared with the control group (Freedman, 1999). Other evaluations found the programme to be beneficial to the children and teachers whose classrooms were assigned Foster Grandparents. One evaluation reported the children felt cared for, had better language skills, and received more individual attention (Corporation for National Service, 1998).

Building from this base, during the course of the next 40 years, intergenerational programs developed around the country and found their way into a number of venues. They became classified in one of three ways; young serving old, old serving young and young and old serving together. They were widely viewed as nice but not substantive, sweet but not necessary. This began to change in the 1980s as a small but growing body of research began to demonstrate participants and their communities showed improved results because of their intergenerational involvement. Two university Centres were established, Generations Together at the University of Pittsburg and the Center for Intergenerational Learning at Temple University. Working independently they pioneered community-based intergenerational programming and included evaluation components that helped begin to grow the field.

At the same time, intergenerational approaches were also evolving from surface programs such as birthday parties at nursing homes. Instead they were beginning to be used to address issues of significance such as environmental protection, community safety, and public policy development.

During this period Generations United (GU) was founded amid tight federal budgets and efforts to force a choice among policy makers to either support the elderly or children. Representing many of the leading children, youth and senior organization, Generations United's aim was to keep the generations from becoming divided and focused only on their own agendas. As Jack Ossofsky, one of GU's founders, later said, "We formed Generations United to argue for a caring society" (Butts, 2005).

Specific Intergenerational Health Programs

One area of intergenerational programming has to do with health promotion and disease prevention. Healthy outcomes can occur from a variety of these efforts. There are specific health related programs such as those described below.

At the North Buffalo Community Center, Ann, 83 years old, leads intergenerational exercise classes that include jump roping and other aerobic activity. Ann is the senior fitness trainer at the Centre and does not hesitate to join the students in vigorous activities. She is an inspiration to the young who learn from her that fitness is a lifelong

pursuit. This intergenerational fitness regime allows each generation to enhance their understanding of themselves and each other while also developing healthy habits for the future. The Centre also blends the generations by hosting after school activities during the school year and offering a youth day camp during the summer months. (Generations United, 2005)

At George Mason University in Virginia, faculty and students from various disciplines developed a web-based health information programme as a service to older adults. The site included disease prevention information, articles, health tips, and self-assessment tests. They also held “town halls” which provided times where students and seniors could meet and discuss health-related issues. (McCrea, Nichols, & Newman, 2001)

At the University of Oregon Health Sciences Center, an intergenerational programme used web-based learning, exercise classes, and healthy snacks as a way to reach and connect young and old as they learned about safety and health issues. Others including Elder Share the Arts in New York and the Kairos Dance Troupe in Minneapolis, Minnesota use dance and physical expression as a way to engage people of different generations and keep them physically active.

Another area of growing interest is that of intergenerational environmental programs. These projects are action-oriented, and include a broad range of environmental initiatives including those focused on environmental health, monitoring, appreciation, and restoration: pollution prevention; and energy conservation. These programs provide a lifespan approach and help people learn about the importance of the environment to the health of people of all ages. One programme example is Habitat International located in Belmont, Massachusetts which provides an environmental community service and learning programme. The programme takes place on an 84 acre sanctuary as well as local schools and senior Centres (Generations United, 2004).

Intergenerational Programs and Health Outcomes

Research in the intergenerational field is still limited but growing. Research underway in other countries has added to the knowledge of what is effective and what is not. The research indicates positive

outcomes for those engaged in quality intergenerational programs (Kuehne, 2003). While specific research related to intergenerational health programs is further limited, the results of the few studies that do exist are encouraging. For example Family Friends, operated since the mid 1980s by the National Council on the Ageing, is a programme that matches older adults with families that include children with disabilities. The volunteers provide respite and support. An evaluation of six Family Friends sites found that participating families had fewer contacts with physicians and fewer hospitalized days for their children than they did before entering the programme (Kuehne, 2004).

Across Ages, a comprehensive intergenerational mentoring programme at Temple University's Center for Intergenerational Learning is a proven methodology that matches middle school youth with older mentors. The purpose of the programme is to prevent unhealthy behaviours such as substance abuse, early sexual activity, and self abuse and injury. Young people are assigned mentors and engage in community service activities in partnership. Evaluations of the programme have demonstrated improved health related outcomes such as sense of well being and safer responses to drug use and teen pregnancy prevention (Kuehne, 2004).

Experience Corps is an example of a successful programme that engages older adults and creates social capital. Operating in 13 cities in the United States, Experience Corps offers adults over the age of 55 a "new adventure in service". In this programme, which began in 1996, Experience Corps members commit at least 15 hours per week to tutor and mentor elementary aged students in schools. The school provides an office and Corps members receive training and a stipend for their service. A two year study conducted by the Center on Ageing and Health at Johns Hopkins University found "significant health benefits" for the older adult participants. Participants were more likely to be physically active with Corps members reporting a 31% increase in the number of blocks walked over the study period compared to non-participants who reported a 9% decrease in their walking, and 44% of felt stronger compared to 18% of the control group. Participants also were more likely to engage in social interaction, read books and watch less television. The students and surrounding communities also benefit from Experience Corps. Student's academic performance increased because of the attention they receive from their

mentors and the connections between schools and neighbourhoods grew (Civic Ventures, 2005).

Intergenerational Shared Sites

Intergenerational programs can occur in a variety of settings. One modality is place based and involves built or natural space that is used to serve and connect more than one generation. Intergenerational shared sites provide programs and services to multiple generations and offer a venue for them to come together for care, enjoyment and life affirming activities (Generations United, 2005). While this manifests itself most commonly as a co-located child care and adult day care centre, the variations on the theme are expansive. Intergenerational shared sites have also included schools with senior centres, senior centres with before or after school programs, shared housing, and community centres that have common and separate spaces for the generations. There are many benefits of shared sites and the health and mental health implications are now being evaluated. A study of ONEGeneration, a shared child care and adult day care programme in California, showed that the signs of dementia slow in older people who participate in intergenerational activities. ONE offers seven intergenerational activities each day. This offers time for interaction between the generations and stimulates the body and mind. Researchers studying the programme found high and low functioning adults were equally as likely to join in intergenerational programs and experience positive affect and high levels of positive behaviours. The treatment group members also experienced more positive affect during their interactions with the children than they did during when not engaged in intergenerational programs (Jarrott & Bruno, 2003).

Other research has found that older residents of shared sites seemed to have more energy which lasted the entire day. They also ate better which was attributed to meals and snacks being more enjoyable and social when shared with another generation, leading them to say “this social programme has resulted in a concrete medical outcome”. Furthermore they found older residents who previously would not participate in activities came out of their rooms when children arrived and the older adults kept better track of time in order to know when the children would be arriving (Lewis, 2002).

Intergenerational communities or shared housing offers another vehicle to promote healthy ageing. Generations of Hope is a licensed foster care and adoption agency in Rantoul, Illinois that operates a planned, geographically contiguous, intergenerational neighbourhood called Hope Meadows. Adoptive families and older adults live in their own homes and share an intergenerational centre. In exchange for reduced rent, the “honorary grandparents” volunteer a minimum of six hours per week. Research has shown that the “mutual helping” that occurs has led to the older adults reporting that they feel better, have purpose in their lives, and take better care of themselves (Generations of Hope, 2006).

Intergenerational Families

While intergenerational programs are most often centred on connecting unrelated people of two or more generations, a phenomenon that has been gaining attention over the last decade is that of Grandfamilies, families in which grandparents and other relatives are raising children. The older caregivers and children are at particular risk of health complications because of the circumstances which caused their formation and the disruption of life plan. More than 2.4 million grandparents have primary responsibility for the children in their care (Simmons & Dye, 2003). These caregivers often face a range of physical and mental health concerns. They may ignore their own health by skipping their own doctor appointments to provide for the children in their care. They often feel alone and report being socially isolated from their peers who are no longer raising children (Generations United, 2005), and report health problems like depression, diabetes, hypertension, insomnia, and gastric distress (Minkler, 1999). According to the U.S. Census Bureau (Casper & Bryson, 1999), many caregivers self-rate their health quite low. More than 33% of the grandmothers and 28.7% of the grandfathers rated their health as poor or fair with only 13.3% of the grandmothers and 15.4% of the grandfathers rating their health as excellent. Another national study found that 32% of caregiving grandmothers met the clinical criteria for depression, compared to 19% of non caregiving grandmothers. They were also significantly more likely to have limitations in Activities of Daily Living (ADL's) such as caring for personal needs, climbing a flight of stairs, or walking six blocks with

56% reporting at least one ADL limitation. (Fuller-Thompson, & Minkler, 2000)

At the same time however, other grandparents have reported taking better care of themselves because of the children in their care. In one study, nearly half the grandparents reported no change in their health status since caring for their grandchildren and one fifth stated that their health improved. A three-year follow-up showed no significant decline in the caregiver's physical well-being (Solomon & Marx, 2000).

Given the stress grandparents already feel, successful programmes are those designed to improve their physical and mental health in their own home or offering options to involve the children at the same time, freeing up time to attend to his or her own needs. Project Healthy Grandparents is an example of an in home model. Started at the University of Georgia and replicated in several other cities, it has shown positive health outcomes for grandparents who participate in the programme. The project offers an interdisciplinary, community based intervention designed to improve the psychological and physical well being of grandparent headed intergenerational households. Healthy Grandparents offers services in the grandparent's home and employees a strength-based approach directed by a team of social workers and nurses.

The University of Pittsburg developed a faith-based intergenerational health and wellness programme aimed at grandfamilies. Programme founders believed that by holding health and wellness programs for grandparents and their children in faith-based organizations they would be more likely to take advantage of other supports offered at the same location. The 12-week programme emphasised participating in exercise, eating healthy foods, preventing injuries and recognising symptoms of disease. The findings, based a small numbers, indicated that the programme had positive impacts on the participants (Duquin, McCrea, Fetterman, & Nash, 2004).

Conclusion

The connection between intergenerational programs and healthy ageing has been demonstrated through a number of models and delivery systems. Older adults engaged in interactions with children and youth appear to maintain their own health to a higher degree than

those who do not. The attention young people receive from another caring adult helps them to flourish as well. Intergenerational health and wellness programs can help older adults maintain better health while teaching young people important, health habits early in life. Connecting the generations is a promising intervention that can have positive outcomes for both young and old. One advocate believes they are so important that he has started a campaign to convince doctors to write prescriptions for volunteering in the programmes for their inactive older patients.

Young and old alike share a desire to have purpose in their life, contribute to the world around them and feel connected to other human beings. Intergenerational programmes offer the bridges that are needed to facilitate healthy ageing, a process that begins early in life.

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An Overview of Exercise Programmes that Reduce Falls in Old People

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ABSTRACT

The incidence of falls in older people is very high, with resultant injuries, hospitalisation, fear of falling, loss of independence and residential care placement remaining a costly burden for today's society. Many interventions to reduce falls have been trialled over the last 2 decades in a variety of populations and often include an exercise component as the principle focus. The aim of this review is to summarise the more important features of the successful exercise programmes, highlighting their effectiveness for

different population groups and stressing the areas where more research is needed to guide our practise.

Key words : Accidental Falls, Aged, Exercise, Exercise Therapy, Geriatric Assessment, Humans, Motor Activity, Tai Ji

Around one in three people over the age of 65 years who live in the community fall each year, and those who fall have an increased risk of falling repeatedly (Hornbrook et al., 1994; Tinetti, Speechley, and Ginter, 1988). Approximately 5-11% of falls result in serious injuries including fractures (Tinetti et al., 1988). In addition to the physical harm, psychological harm in the form of fear of falling (with resultant restriction of activity), loss of independence and reduced quality of life is a major concern (Tinetti, Mendes de Leon, Doucette, and Baker, 1994).

Initially, literature concentrated on identifying risk factors of falling. Factors identified included lower limb muscle weakness, balance and sway impairment, slow reaction time, medication use (in particular psychotropics), impaired vision, and a history of previous falls (Lord, Ward, Williams and Astey, 1994; Nevitt, Cummings, Kidd, and Black, 1989; Tinetti *et al.*, 1988). This indicates that falls are not merely random “accidents” which can happen to any older person but events that can be predicted to some extent and therefore potentially prevented. Many randomised controlled trials (RCTs) have now evaluated interventions to reduce falls.

Recent literature reviews have summarised these interventions (Chang *et al.*, 2004; Gillespie *et al.*, 2003; Sherrington, Lord, and Finch, 2004). The Cochrane Musculoskeletal Injuries Group (systematic review evaluating 62 RCTs involving 21,668 people) has identified several approaches shown to successfully reduce falls risk including a targeted multifactorial approach to risk factor identification and improvement, home hazard assessment and modification in previous fallers, psychotropic medication withdrawal, and cardiac pacing for those with neuroinhibitory neurocardiogenic syncope (Gillespie *et al.*, 2003).

Other specifically exercise based interventions, including a Tai Chi programme (Li *et al.*, 2005; Wolf *et al.*, 1996), and a home based balance and strength training programme - the Otago Exercise Programme (Campbell, Robertson, Gardner, Norton and Buchner,

1999a; Campbell *et al.*, 1997; Robertson, Campbell, Gardner, and Devlin, 2002; Robertson, Devlin, Gardner, and Devlin, 2001a; Robertson, Gardner, Devlin, McGee, and Campbell, 2001b) have been successful in reducing falls risk. Several recent well-designed group exercise programmes have been shown in RCTs to prevent falls (Barnett, Smith, Lord, Williams, and Baumand, 2003; Lord *et al.*, 2003; Skelton, Dinan, Campbell, and Rutherford, 2005). These programmes have been tested in various settings with different high and low-risk populations. Whilst there is no single common feature amongst these programmes that has been proven successful, it is possible to draw some conclusions about which features may contribute to successful falls reduction, and for which populations the interventions can be applied.

Individual exercise programmes

The Otago Exercise Programme is a series of home exercises devised in New Zealand using a combination of strengthening and balance exercises, and a walking programme. Women aged over 80 years carried out progressive exercise, individually prescribed by a trained physiotherapist, 2-3 times per week for one year (Campbell *et al.*, 1997) and on completion of the were invited to continue for another year (Campbell *et al.*, 1999a). There was a significant reduction in falls risk after the first year of the study (between group difference 0.47, 95%CI 0.04-0.90) and this effect remained at the end of the second year (RR 0.69, 95%CI 0.49-0.97). Sixty-nine percent of intervention and 74% of control group from original study completed the second year. The Otago Exercise Programme was also carried out among a group of community-dwellers, but delivered by a community nurse (trained by a physiotherapist) rather than a physiotherapist (Robertson *et al.*, 2001a) and in routine health care settings (Robertson *et al.*, 2001b). Again, falls were reduced with both these approaches (IRR 0.54, 95%CI 0.32-0.90) and (IRR 0.70, 95%CI 0.59-0.84) respectively.

However, two other studies found the Otago Exercise Programme alone failed to significantly reduce falls rates (Campbell, Robertson, Gardner, Norton and Buchner, 1999b, Campbell *et al.*, 2005). Campbell *et al.*, 1999b randomised participants over the age of 65 and taking psychotropic medication to receive (1) The Otago Exercise programme, (2) gradual withdrawal of psychotropics, (3) both

interventions or (4) neither intervention. The withdrawal of psychotropic medications was highly effective in reducing falls (RR 0.34, 95% CI 0.16-0.74), but the exercise programme did not impact on falls (RR 0.87, 95% CI 0.36-2.09). Furthermore, community dwellers over 75 years with visual acuity 6/24 or less were randomised to receive (1) home safety assessment and modification by an occupational therapist, (2) the Otago Exercise Programme plus vitamin D supplementation, (3) both interventions or (4) social visits (Campbell et al., 2005). The home safety and modification programme was effective in reducing falls (IRR 0.59, 95% CI 0.42-0.83), but there was no effect of the exercise programme (IRR 1.15, 95% CI 0.82-1.61). However compliance with the exercise programme was poor, as subgroup analysis revealed that stricter adherence with the exercise programme was related to fewer falls ($p=0.001$).

In addition, an individual patient data meta-analysis, and identified that the Otago exercise Programme was most effective for people over the age of 80 years who had previously fallen, compared to those aged between 65 and 79 years.(Robertson et al., 2002)

Individual exercise programmes not found to reduce falls

An individually tailored walking programme that did not include a balance or strength component (Ebrahim, Thompson, Baskaran and Evans, 1997) was investigated as a falls intervention, but was unsuccessful at reducing falls.

Seated strength exercises alone were investigated for falls reduction in older people recently discharged from hospital (Latham et al., 2003). Participants were allocated to (1) vitamin D supplementation, (2) seated quadriceps strengthening exercises (3) both interventions or (4) neither intervention, with attention and placebo controls for those not receiving either of the intervention arms. Not only did this study fail to reduce falls rates, a significant risk of musculoskeletal injury was identified amongst those receiving this form of exercise (RR 3.6, 95%CI 1.5-8.0). Whilst the exercises were designed to be progressive, the participants had great difficulty achieving a high intensity, limited by the common complaint of muscle soreness, which affected activities of daily living. Only 25% of participants were able to reach greater than 60% of 1RM. Interestingly, the seated resistance exercises did not even improve strength in this population.

Group exercise programmes

Several studies have investigated the effectiveness of a group exercise approach to falls reduction. This is an important concept, as many older people enjoy the socialisation and opportunity to leave the home that a group exercise programme offers.

Combined strength and balance programmes

Several studies have investigated group exercise programmes that combined strength, balance and functional components (Barnett et al., 2003; Buchner et al., 1997; Day et al., 2002; Lord et al., 2003; Skelton *et al.*, 2005). Most were individually tailored and progressive, and some combined features that have been successful in other trials. Many included supplementary home exercises. One study (Skelton et al., 2005) used exercises based on the Otago programme (Robertson et al., 2001a), and reduced falls when compared to an attention control group (IRR 0.69, 95%CI 0.50-0.96).

Another study (Barnett et al., 2003) included modified Tai Chi movements combined with more traditional balance and strength exercises and also reduced falls in the exercise group (IRR 0.60, 95%CI 0.36-0.99). A cluster randomised trial targeting residents of retirement villages and hostels tested a 12-month group exercise programme again designed to address falls risk factors and improve function. (Lord et al., 2003) The adjusted falls risk for the intervention group was significantly reduced (IRR 0.78, 95%CI 0.62-0.99). A factorial study (Day et al., 2002), targeted community dwelling participants who received exercise and/or management of visual impairment and/or home hazard modification or control group. The 15 weekly classes (with supplementary home exercises) significantly reduced falls (Rate ratio 0.82, 95%CI 0.70-0.97), and this reduction was enhanced by the addition of the other 2 interventions (Rate ratio 0.67, 95%CI 0.51-0.81). However, the non-exercise interventions alone were ineffective in reducing falls. As part of the FICSIT collaboration (Province et al., 1995), one trial investigated the effect of group strength and endurance training on falls and falls risk factors (Buchner et al., 1997) in subjects with strength and balance deficits. Whilst there were no effects on gait, balance or physical health status, there was a significant reduction in falls when the exercise groups were analysed together (RR 0.61, 95%CI 0.39-0.93).

Tai Chi Group interventions

Another study within the FICSIT collaboration (Wolf et al., 1996) compared the effectiveness of a 15 week group programme of Tai Chi, individual computerised balance training and control (education groups) on an unselected community population. The Tai Chi group was progressed by gradually reducing the base of standing support until standing on one leg and increasing body rotation. This Tai Chi intervention was successful in increasing the time to first fall (unadjusted RR 0.63, 95%CI 0.45-0.89) when using the FICSIT definition for falls, but computerised balance training was not. A similar study in a population that had not been involved in strenuous activity in the previous 3 months (Li et al., 2005) also showed improved falls rates after adjustments for covariates (RR 0.46, 95%CI 0.26-0.8).

However, Wolf et al., 2003 also used a cluster randomised trial of congregate living facilities to target more impaired older adults with a 48 week Tai Chi programme. With this selected population, there was no significant reduction in falls, despite a trend towards improvement (RR 0.75, 95%CI 0.52-1.08). It is likely that this population were unable to adequately perform the exercises to obtain the same level of benefit gained by the younger, fitter subjects in the other trials.

Group exercise programmes not shown to reduce falls

A number of studies investigating group exercise interventions have found these to be unsuccessful in reducing falls rates (Bunout et al., 2005; Carter et al., 2002; Lord, Ward, Williams and Strudwick, 1995; Morgan et al., 2004; Reinsch, MacRae, Lachenbruch, and Tobis, 1992; Steinberg, Cartwright, Peel, and Williams, 2000). Small sample sizes, and/or low compliance rates (Bunout et al., 2005; Carter et al., 2002), non-progressive exercise or tailored in intensity and/or type (Carter et al., 2002; Lord et al., 1995), low intensities (Morgan, Virnig, Duque, Abdel-Moty, and Devito, 2004; Reinsch et al., 1992) and/or did not make clear whether they were progressive/tailored (Reinsch et al., 1992; Steinberg et al., 2000) may have affected the outcomes. In addition, some trials may have used populations that were too 'fit', where too few falls occurred to allow adequate power to detect a difference. (Bunout *et al.*, 2005)

Other Considerations

Major contraindications to embarking on an exercise programme for older people were identified and published in the late 1990's by the American College of Sports Medicine.(Anonymous, 1998) The American Heart Association also has guidelines for those with and without cardiovascular disease. (Pollock et al., 2000) Whilst not specifically the topic of this paper, contraindications should be considered in all older people prior to commencement of an exercise programme.

Common features of successful interventions

Features which appear to be common amongst the successful falls reduction interventions include progressive weight-bearing exercises with a balance component, tailored in intensity. The intensity of balance training should be sufficiently challenging to promote improvements in postural stability. Many successful trials also included challenging functional exercises that practised daily activities (Lord, Sherrington, Menz and Close, In Press).

Whilst many studies included a strength component, the one trial which examined this approach in isolation (Latham et al., 2003) did not improve falls rates, and instead found an increased risk of adverse events. The role of strength training as a single intervention for falls reduction requires more investigation. It seems clear that frailer, more impaired or less well older people find it difficult to achieve intensities of strength training that result in increased strength, at least in home programmes.

The duration of the exercise programmes was variable amongst the successful trials (between 6 weeks and 12 months), but most involved a session that lasted up to an hour, and occurred at least 3 times per week (either in groups or in the home). Exercises were prescribed and modified in all cases by trained professionals – physiotherapists, exercise instructors or nurses. (Lord et al., In Press)

Conclusions from the evidence

It seems that exercises that are tailored in intensity and progress according to individual improvements are more likely to be successful in preventing falls, especially when they include a balance component. The presence of a strength component requires more study.

The Otago Exercise Programme appears effective in reducing falls in older community dwelling individuals (especially over 80

years old), but appears ineffective for those on psychotropic medications or with severe visual impairment.

Tai Chi may well be effective at preventing falls, however, it appears that for those with limitations in movement or function, Tai Chi may be too challenging for benefits to be achieved. Further trials are required to confirm this.

High risk groups such as the cognitively impaired, visually impaired, frail, medicated, those with neurological conditions such as Parkinson's disease or stroke, and those with arthritis or recovering from lower limb surgery need targeting in future studies to assist in prescribing more specific falls interventions to those that may not respond to conventional approaches. In addition, older people recently discharged from hospital require further investigation, as limited exercise interventions have been trialled in this group.

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Activities of Daily Living and Its Correlates Among Elderly

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ABSTRACT

With the aging population pyramidal change over the years, the prospect and the problems of the old has evolved to be serious concern for many social scientists. The morbidity and physical function of the old has become the focus area for determining the wellness of the aged. Healthy life expectancy and disease free life expectancy are important catch concepts for gerontologists. This paper attempts to determine how the marital status, educational level and socio-economic status of the elderly influence the physical activities in everyday life. The findings of this research showed that educational level, marital status, and socio-economic status significantly influence the activities of the daily living of the elderly.

Keywords: Physical activity, elderly, Aging, Daily living

With the advancement of science and technology and through its meaningful utilisation for good living, the pyramid population structure has changed into a cylindrical structure. The growth of the elderly population is expected to escalate in the coming years with respect to the general population. Comparing the various geographical regions of the world and especially between the developed and

underdeveloped countries, the UN Population Projections observed various differences in different regions of the world about the elderly and their wellbeing (Chadha, Bhatia, Chao, Rohatgi, & Mir, 2005). The meaning of aging and wellbeing varies dramatically across cultures: from virtually being irrelevant in some to being highly elaborated in others (Keith, 1990). The values attached to the aged and their quality of life also varied with culture and roles. Review of historical and anthropological evidences indicated that in many societies, elderly retain status, authority, power and active social environment. However, these characteristics are unfortunately modified by economic stresses in many of the present materialistic societies (Chao, Chadha, & Joshi, 2004). The social circumstance further affects the functional status and lifestyles of the elderly. In some societies the traditionally endured systems and practices that once delicately nurtured its population (e.g. when people aged) developed a greater prevalence of morbidity and greater amount of disabilities when their core support was not present. Still there are some societies where nurturing the elderly with ongoing aged friendly practices enable the elderly to remain active and robust (Chao, 2004).

The wellbeing and improved functional status of the elderly is intimately linked with their educational status because education enables greater adaptability to changing socio-economic conditions (Chadha, Chao, Majumdar, Sharma, & Rohatgi, 2006). Surveys have indicated that rural India reflects a greater degree of financial insecurity among the aged. Inadequate financial resources have been indicated as one of the major problems of the Indian elderly (Desai, 1985), which possibly attenuate the low rate of education. Even among the elderly community the financial inadequacy seems to be at a higher degree for female elderly compared to their male counterparts (Dak & Sharma, 1987).

Detailed investigation indicates that around 67 percent of elderly males work as cultivators, whereas 70 percent of females work as agricultural labourers. The majority (about 80 %) of Indian elders still reside in rural areas, in which 40 percent live below the poverty line and nearly 33% just above it (National Sample Survey Organisation, 1998). Inadequate financial resources are major problems of Indian elders, with higher degree of economic insecurity among the older women (Rajan, Mishra, & Sarma, 1999). The most vulnerable are

those who do not own productive assets, have little or no savings or income from the investments made earlier, have no pension or retirement benefits, are not taken care of by their children, or they live in families that have low and uncertain incomes and a large numbers of dependents (Bose, 1996). In the rural areas, families suffer from economic crises, as their occupations do not produce income throughout the year. The tendency is to spend more on their growing children, while diminishing expenditure on aged parents; thus, financial security of the elderly in rural areas families is very limited (Bali, 1995).

In India, nearly 90 percent of the elderly work force is employed in the unorganized sector, the majority in agriculture, and workers in this sector are neglected to numerous disadvantages. Wages are relatively low and there is no job security. Most do not have year around work and labour turnover is high. All these conditions, the prevailing nature of the developing countries, have great implications to the activities of daily living of the elderly. The predominant rural character of the population, coupled with fewer opportunities for sufficient wages and salaried employment, compel the elderly to prolong their working lives as long as it is physically possible (Chadha et al., 2006). Even in the case of self-employment, economic necessity forces many to continue work as long as they are able, although perhaps at a reduced rate. On the whole, analysis of the employment patterns of the working elderly shows that their work participation rates were decreasing which is more significantly higher in rural areas compared to urban areas.

To this end, when to consider the successful aging is to combine survival with a concept of health and its correlates on the ability to perform activities of daily living is to calculate healthy life expectancy as an indicator of the population's health disabilities free life expectancy and life expectancy without chronic disease are two estimates of health life expectancy. This assessment of health life expectancy allows to assess the evaluation of mortality, morbidity and disability simultaneously and the discrepancies among these conditions. The outcome of these assessments could lead to spearhead to measure the limitations and abilities to perform any activities of daily living for personal care and maintenance.

Activities of Daily Living: Terms and Definition

The term activities of daily living (ADL) can be referred to as a set of common, everyday tasks, which is required for personal self-management, and maintenance and independent living (Chadha et al., 2006) such as eating, bathing, dressing, toileting, and getting in and out of a bed or chair. When people are unable to perform these activities, they need help in order to cope, either from care workers, mechanical devices, equipments or any other instruments that can support them. Problems in performing the activities of daily living are especially prevalent among persons with certain diseases such as arthritis, osteoporosis and stroke. Although persons of all ages may have problems performing many the ADLs, prevalence rates are much higher for the elderly (65 years and over) than for the non-elderly. Within the elderly population, disability rates could rise steeply with advancing age and are especially high for persons aged 85 and over.

Measurement of ADL and its Importance

In many developed societies ADL dependency measures are vitally important for insurance companies etc to determine whether an individual qualifies for benefits. There are certain ADL items which have been used in determining eligibility for benefits in several proposed public insurance programs. Private insurance plans are more varied in which ADLs they use to determine eligibility for benefits (van Gelder, 1989). However, due to lack of care system, policies and the other insurance program in the developing countries, the estimation and problems of performing the ADL is relatively scarce and new.

Measurement of the activities of daily living is found to extremely important because they have been found to be significant predictors of admission to a nursing home (Hanley, Alecxi, Wiener, & Kennell, 1989), use of home care (Newman, Struyk, Wright, & Rice, 1988), use of hospital services (Liu & Manton, 1988), living arrangements (Bishop, 1986), overall Medicare expenditures, (Gruenberg & Tompkins, 1986), insurance coverage (Dunlop, Wells, & Wilensky, 1989), and mortality (Manton, 1988), requirement of social support system and overall determinants of the quality of life. For research on the elderly, the ability to perform the ADLs has become a standard variable to include in analyses, like age, sex, marital status, income, resident and other status.

Measures of the ability to perform the ADLs have become more common in any research on the elderly; ADLs are more specific and concrete than an inability to perform a “major activity” thus minimizing situational or contextual differences among survey respondents. For example, the physical strength requirements of the major tasks for a construction worker are very different than those for a software engineer. Since ADLs have been defined as having more elements (Malhotra & Chadha, 1997), they can provide more highly differentiated levels of disability. In addition, ADLs can be used as a standard tool to provide general information on the basic social service needs of the disabled. A person unable to sit and stand unaided needs assistance such as that from carers, mechanical devices or any instrumental supports is an example. Finally, as mentioned earlier, ADL status is a good predictor of a wide range of health-related behaviour or functional status (Chadha et al. 2006).

The Numbers of items in any assessment of ADL vary from research to research based on the established conceptual framework and the contextual variations which it is conducted. Most common included items of ADL in any research are eating, toileting, transferring, dressing, and bathing. Because of considerations of time, respondent burden, and the contextual relevance and significance not all of these questions may be asked. Other research may or may not include activities such as walking, getting around inside, getting around outside controlling bowels or urine, handling money, caring of personal appearances, using phones, taking medication, etc. (Nagpal & Chadha, 1991). Furthermore, investigators could ask any questions on what type of assistance was received, the degree of difficulty in performing each ADL, the duration of the disability, etc. Altering the wording of questions can also produce subtle variations. Even within a single study, the inclusion of multiple questions for a given ADL item can produce different estimates depending on which questions are chosen to measure a limitation. A critical definition issue concern is whether to classify disabled persons as “receiving active human assistance” relying on “special equipment or mechanical aids” or requiring only “supervision or stand-by assistance” as having limitations in performing the ADL due to age or due to other morbidities. Mechanical assistance can include such devices as grab bars on special beds to facilitate transferring. Arguably, some people would need human assistance if the special equipment were not

available. Stand-by assistance is also often needed by persons with cognitive impairment whose motor abilities may actually be quite good, but who are not always sure what they are supposed to do. In such situations it would be difficult to determine the level of problems and limitations in performing the ADL due to their old age.

Policy analysts and actuaries will need to make their cost estimates consistent with how tightly the program will be administered, how they believe the elderly will respond to the availability of support systems: finance, social supports, caretakers, etc., and how important it is that costs not be under- or overestimated (Chadha et al., 2006).

Methodology

Rationale of the Present Study

One explanation for differing results in ADL research may be that the outcome variable, activities of daily living, was measured in different ways in each study. Measuring activities of daily living is an interest to many gerontologists. Function is a multidimensional concept that can encompass sensory and cognitive function, personality and motivation, gender differences, and even environmental factors. There are distinctly different patterns in health risk for men and women (Kane, 1991) that are reflected also in statistics of activities daily living. Isolating the different dimensions is a dimension of various ADL gerontological in a population study. On the other hand, the multidimensional nature of measuring ADL is also the source of their strength and importance in research.

Though there are many instruments available for measuring ADL in the elderly, and there is very little standardisation between them. Most studies use an index that combines self reported activities of daily living and various mobility items. Some items ask if the subjects experiences difficulty with a task or activity; other ask if the subjects need personal assistance by someone else. The applicability and reliability of any measure on ADL, thus to be largely depend on the existing culture and social environmental situations.

Objectives

- Determine and compare the effect of marital status on the ability of the elderly to perform basic activities of daily living.

- Determine and compare the influence of education level on the ability of the elderly to perform basic activities of daily living.
- Determine and compare the role of socio-economic status on the ability of the elderly to perform basic activities of daily living.
- Predict the factors contributing to the performance of activities of daily living of the elderly persons.

The present research study was designed to investigate the various aspects of ADL and its correlates of ambulatory older subjects living in the NCR. Different aspects which are considered to be essential predictors of ADL were factorised, deliberated and incorporated in the study. The elderly were assessed on how they maintained and performed their ADL and the problems faced in performing such activities.

The study endeavoured to compare all these aspects in terms of marital status, socio-economic status, and level of education. The factors that contribute to affect the ability to perform the ADL were also analysed.

Sample

Inclusion criteria for the study were :

- Aged 60 years and over and residing in Delhi.
- No cognitive impairment or any other psychiatric disorder.
- Communication was coherent.
- No severe physical disorders which may be debilitating in nature.

Overall the stratified random sampling method was employed throughout the process of data collection so as to include acceptable representation of different marital status, socio-economic status, and educational groups of the elderly. Altogether a total sample of 1000 elderly people was taken from the capital territory of Delhi.

Materials

The elderly were assessed on the different aspects of limitations and abilities to perform the ADL. Further, considering these limitations and abilities, which may be considered to be the predictors of the factors that affect to perform activities of daily living were also analyzed. The test used to study was:

Activities of Daily Living Scale

This scale was developed by the researchers to determine the degree to which the elderly may be adversely affected in these activities on a daily basis. A list of 13 items were included with three categories of response options as “Yes”, “No”, and “Sometimes”. The response of “Yes” means that they do have a problem with that activity, “No” means that they do not have a problem, and can perform that activity without any difficulty and “Sometimes” means that the subject finds problems in doing on and off but not always. A score of “0” is awarded to the response of “No”, “1” is given to the response of “Sometimes”, and “2” is given to the response of “Yes” categories. The higher score indicates greater difficulties in performing the ADL. Inferential Statistics were used in data analysis.

Results and interpretation

The results are presented in the form comparisons between various criterion groups in the form of t-tests such as various marital status, educational level difference, and socio-economic status difference on activities of the daily living.

Comparison on the basis of marital status, the subjects were classified as either:

1) Married and living with spouse 2) Widowed and 3) Single/never married

For comparison on educational level, the subjects were classified as either:

1) Primary level educated 2) Secondary level educated 3) College level educated and 4) University level educated.

For comparison on the basis socio economic status, the subjects were classified as either:

1) Low Socio-Economic Status (Those whose income is Rs. 1000 per month and below) 2) Lower Middle Status (Those whose income is between Rs.1000 and 5000 per month) 3) Upper Middle Status (Those whose income fall between Rs.5000 and 10,000 per month) and 4) Above Upper socioeconomic status (Those whose income is above Rs. 10,000 per month)

Table 1: Effect of marital status on the activities of daily living

Sl. No.	Variables	Married (735) a		Widowed (197) b		Single/never Married (68) c		t-value		
		M	SD	M	SD	M	SD	a vs b	a vs c	b vs c
1	Dress up yourself	.04	.26	.09	.37	.09	.41	1.98*	1.36	.04
2	Get out bed yourself	.06	.31	.09	.37	.16	.54	1.39	2.52*	1.20
3	Comb your hair yourself	.04	.26	.10	.38	.04	.27	2.71**	.18	1.16
4	Eat without help	.03	.24	.09	.40	.06	.34	2.39*	.84	.51
5	Take your bath yourself	.05	.28	.15	.47	.09	.41	3.62**	.98	.92
6	Use the toilet without help	.08	.38	.17	.52	.09	.41	2.68**	.08	1.22
7	Walk independently in the house	.09	.37	.16	.47	.15	.49	2.12*	1.17	.15
8	Walk independently on the road	.26	.62	.44	.76	.10	.43	3.50**	1.99*	3.47**
9	Taking medication yourself	.08	.37	.12	.41	.09	.41	1.12	.11	.49
10	Can you use the phone independently	.18	.54	.51	.84	.15	.49	6.71**	.42	3.33**
11	Household activities (like cooking, housekeeping)	.24	.62	.42	.74	.31	.69	3.52**	.88	1.09
12	Money handling	.14	.49	.28	.66	.19	.58	3.43**	.84	1.03
13	Interest in personal appearance	.15	.50	.37	.73	.13	.48	4.84**	.25	2.46*

** denotes pair of groups significantly different at 0.01 level

* denotes pair of groups significantly different at 0.05 level

Table 2: Effect of education level on the activities of daily living

S. No.	Variables	Primary (280) a		Secondary (182) b		College (356) c		University (182) d		t-values					
		M	SD	M	SD	M	SD	M	SD	ab	ac	ad	bc	bd	cd
1	Dress up yourself	.07	.36	.05	.29	.03	.22	.07	.33	.40	1.61	.11	1.08	.50	1.69
2	Get out bed yourself	.08	.37	.07	.33	.06	.30	.09	.37	.38	.84	.27	.34	.60	1.06
3	Comb your hair yourself	.08	.37	.03	.23	.04	.25	.05	.28	1.48	1.60	.90	.29	.61	.43
4	Eat without help	.07	.35	.03	.26	.03	.22	.05	.31	1.17	1.75	.41	.23	.74	1.15
5	Take your bath yourself	.12	.43	.07	.31	.05	.29	.05	.29	1.42	2.37**	1.74	.57	.35	.17
6	Use the toilet without help	.18	.52	.06	.32	.08	.37	.08	.37	2.65**	2.73**	2.19*	.57	.46	.05
7	Walk independently in the house	.15	.49	.14	.44	.07	.32	.09	.37	.28	2.58**	1.47	2.09*	1.16	.67
8	Walk independently on the road	.34	.71	.24	.61	.26	.62	.28	.63	1.46	1.35	.85	.39	.59	.28
9	Taking medication yourself	.13	.45	.05	.31	.08	.35	.09	.37	1.94	1.58	1.02	.77	.92	.28
10	Can you use the phone independently	.51	.84	.15	.52	.14	.48	.10	.41	5.08**	6.92**	6.02**	.29	.99	.86
11	Household activities (like cooking, housekeeping)	.36	.73	.23	.58	.28	.65	.21	.58	2.10*	1.51	2.28*	.92	.18	1.12
12	Money handling	.28	.65	.09	.40	.14	.49	.14	.51	3.49**	3.18**	2.44*	1.05	1.03	.12
13	Interest in personal appearance	.25	.62	.19	.58	.15	.51	.16	.53	.90	2.12*	1.62	.89	.66	.10

** denotes pair of groups significantly different at 0.01 level

* denotes pair of groups significantly different at 0.05 level

Table 3: Effect of socio-economic status on the activities of daily living

S. No	Variables	Low (163)		Lower Middle (220)		Upper Middle (309)		Above Upper (308)		t-values					
		M	SD	M	SD	M	SD	M	SD	ab	ac	ad	bc	bd	cd
1	Dress up yourself	.07	.34	.08	.36	.04	.27	.03	.24	.22	1.09	1.52	1.45	1.89	.47
2	Get out bed yourself	.08	.35	.13	.46	.06	.30	.04	.25	1.2	.79	1.59	2.30*	3.08**	.87
3	Comb your hair yourself	.09	.38	.07	.33	.04	.25	.04	.25	.49	1.75	1.74	1.29	1.29	.01
4	Eat without help	.06	.32	.08	.38	.03	.19	.04	.26	.60	1.24	.72	2.03*	1.49	.53
5	Take your bath yourself	.14	.42	.07	.35	.07	.33	.04	.27	1.57	1.79	2.89**	.05	1.13	1.18
6	Use the toilet without help	.16	.48	.10	.42	.11	.43	.06	.34	1.29	1.13	2.48*	.27	1.07	1.44
7	Walk independently in the house	.15	.44	.13	.44	.15	.44	.15	.44	.47	.70	3.14**	.22	2.63**	2.44*
8	Walk independently on the road	.36	.68	.32	.67	.32	.70	.18	.54	.48	.57	3.03**	.09	2.67**	2.68**
9	Taking medication yourself	.15	.49	.18	.52	.06	.30	.03	.21	.58	2.53*	3.55**	3.43**	4.44**	1.08
10	Can you use the phone independently	.46	.80	.41	.78	.17	.55	.06	.33	.57	4.60**	7.54**	4.19**	7.03**	2.94**
11	Household activities (like cooking, housekeeping)	.42	.74	.25	.62	.32	.70	.18	.55	.57	1.44	4.01**	1.25	1.33	2.79**
12	Money handling	.34	.72	.21	.59	.146	.50	.07	.36	1.94	3.47**	5.39**	1.43	3.38**	2.01*
13	Interest in personal appearance	.42	.77	.22	.59	.17	.55	.06	.34	2.87**	3.94**	6.89**	.87	3.79**	2.98**

** denotes pair of groups significantly different at 0.01 level

* denotes pair of groups significantly different at 0.05 level

A. Marital Status and Activities of Daily Living: Comparison between the various marital status groups on the activities of daily living can be seen in Table 1. A comparison between the various elderly marital status groups on dressing up of themselves, showed significant difference between married elderly and widowed elderly at 0.05 level of significance. However, no difference was indicated between married and single/never married elderly group, on the same activity at any level of significance. On the item of get out of the bed, the comparison between various marital status groups showed significant difference between married and single/never married elderly at 0.05 level of significance. No significant differences were indicated between married and widowed, and widowed and the single/never married at any level of significance.

On the item of combing of hair, the statistically significant difference is found only between married and widowed elderly at 0.01 level of significance. No difference was found between married and single/never married and widowed and single/never married at any level of significance. Regarding the item of eating without help is concerned, the difference between various marital status groups of the elderly is significant between the married and widowed at 0.05 level of significance but not between married and Single/never married elderly persons.

When the activity of taking bath by oneself is taken to compare between various marital status groups, the results indicated significant difference between married and widowed at 0.01 level of significance but no significant difference is found between the married and single/never married and widowed and single/never married elderly persons at any level of significance. The comparison among the various marital status groups with regards to ability to using of toilet the results indicated significant difference exists only between married and the widowed which is at 0.01 level of significance. No significant differences were indicated between married and single/never married and widowed and single/never married elderly persons at any level of significance. On item of walking independently in the room, the comparison showed a significant difference between married and widowed at 0.05 level of significance but no differences were found between the married and single/never married and widowed and the single/never married at any level of significance.

In contrast to the walking independently in the room, walking independently on the road showed a different picture. The comparison between various marital status groups showed significant difference between the married and widowed elderly groups and widowed and single/never married elderly persons at 0.01 level of significance. The difference between the married and the single/never elderly groups is at 0.05 level of significance. Testing on the item of to using phone independently the differences between various elderly marital status groups are found only between married and widowed and widowed and the single/never married at 0.01 level of significance. No difference is found between the married and the single/never married elderly groups at any level of significance. In the activity of household activities such as housekeeping and cooking, the difference is found between the married and the widowed group at 0.01 level of significance. No significant differences were found between the married and single/never married, and widowed and single/never married at any level of significance.

In case of the item on money handling, the comparison between the groups brought out a result indicating significant difference between married and the widowed at 0.01 level of significance. No differences were found between the married and single/never married and widowed and single/never married at any level of significance. Lastly, when various marital status groups were compared with respect to the activity of interest in personal appearance, the results indicated significant difference between the married and widowed and the widowed and single/never married at 0.01 level of significance. No statistically significant difference is found between the married and single/never married with respect interest in personal appearance. The only activity where there is no difference between any of the elderly marital status groups is taking medication by oneself. The results indicate no significant difference at any level of significance.

From the mean scores we can see that the widowed elderly group have maximum problems in performing the activity of the daily living among the various marital status groups. And the elderly married group found to have least numbers of problems in performing the activities of daily living.

B. Educational Level and Activities of Daily Living: Table 2 shows the effect of educational level on the activities of daily living of

the elderly. When the various elderly educational level groups are compared, on the activities of daily living, the results indicated no significant difference on the ability to perform activities like dress up of oneself, get out of the bed, combing of hair, eat without help, walk independently in the road, and taking medication at any level of significance. A comparison between various elderly educational level groups with respect to taking of bath without help showed a significant difference between primary level educated and college level educated elderly at 0.05 level of significance. However, no significant differences were indicated between the groups of primary level educated and secondary level educated, primary level educated and the university level educated, secondary level educated and college level educated, secondary level educated and the university level educated, and college level educated and university level educated elderly at any level of significance.

In the activity of using toilet without help, the comparison between various elderly educational groups on the ability to perform, significant difference was found between primary level educated and college level educated elderly at 0.01 level of significance. The difference between primary level educated and the university level educated elderly is found at 0.05 level of significance. However, no difference is indicated between primary level educated and secondary level educated, secondary level educated and college level educated, secondary level educated and university level educated, and college level educated and university level educated elderly at any level of significance. In the activity of walk independently in the room, the comparison between various groups showed significant difference exists between the primary level educated and college level educated at 0.01 level of significance and the difference between the primary level educated and university level educated is significant at 0.05 level of significance. No statistically significant differences were found between the primary level educated and secondary level educated level, primary level educated and university level educated, secondary level educated and university level educated, and college level educated and university level educated elderly at any level of significance.

In the activity of using of phone independently, the comparison between the various elderly educational level groups showed

significant differences between the primary level educated and college level educated, and primary level educated and university level educated elderly at 0.01 level of significance. No significant differences were found between the group primary level and secondary educated, secondary level educated and college level educated, secondary level educated and university level educated and college level educated and university level educated at any level of significance. In the item of household activity (cooking, housekeeping, etc.), the comparison between various groups of the elderly educational levels showed significant difference between the primary level educated and university level educated at 0.05 level of significance. No differences were shown between the primary level educated and secondary level educated, primary level educated and college level educated, secondary level educated and college level educated, secondary level educated and university level educated, and college level educated and university level educated at any level of significance.

With regards to handling of money, the comparison between various groups of elderly educational levels on the ability to perform, the results indicated significant difference between the primary level educated and college level educated at 0.01 level of significance. The difference between the primary level educated and the university level educated elderly groups also significant at 0.05 level of significance. No statistically significant differences were found between the primary level educated and the secondary level educated level, secondary level educated and college level educated, secondary level and university level educated, and college level educated and university level educated at any level of significance.

With regards to interest in personal appearance, the comparison between various educational levels groups of the elderly, the results showed significant difference between the primary level educated and college level educated at 0.05 level of significance. No significant differences were found between the primary level educated and secondary level educated, primary level educated and university level educated, secondary level educated and college level educated, secondary level educated and university level educated, and college level educated and university level educated at any level of significance. From the mean scores, it can be seen that the college

level educated elderly group has the least number of problems in performing the ADL. And the primary level educated level group of the elderly has the largest numbers of problems in performing the ADL.

C. Socio-economic Status and Activities of Daily Living: Table 3 shows the detailed results of the comparison between the various socio-economic groups of the elderly on their ability to perform the activities of daily living. As the comparisons were made on each item of the activities of daily living between the various groups of the elderly socio-economic status, the results showed no significant difference at any level of significance between any of the given socio-economic status groups with respect to the activities of ability to dressing up oneself, and combing of hairs oneself.

With respect to the item of getting out of the bed oneself, the comparison showed differences between the lower middle socio-economic status group and above upper socio-economic status group at 0.01 level of significance. Lower middle socio-economic status groups also found to have significantly different from the upper middle socio-economic status group. The difference is significant at 0.05 level of significance. No differences were found at any level of significance between the groups of low socio-economic status and lower middle socio-economic status, low socio-economic and above upper socio-economic status group, upper middle socio-economic status group and above upper socio-economic status group of the elderly.

The comparison between the various elderly socio-economic status groups on their ability to perform the activity of eating without help showed that the difference is found only between the lower middle socio-economic status and upper middle socio-economic status of the elderly at 0.05 level of significance. No significant differences were found between any of the other groups at any level of significance. Similarly, when the groups were compared with respect to the activity of using toilet without help, the results indicate significant difference between the low socio-economic status group and the above upper socio-economic status group at 0.05 level of significance. Again no other groups were found to have significantly differed at any level of significance.

When the item on the ability of walking independently in the room is compared among the various elderly socio-economic status groups of the elderly, the results showed significant difference between the various groups of low socio-economic status and above upper socio-economic status, and lower middle socio-economic status and above upper socio-economic status of the elderly at 0.01 level of significance. The difference between the upper middle socio-economic status groups and above upper socio-economic status group is also found at 0.05 level of significance. No differences were indicated between the various socio-economic groups, the low socio-economic status and lower middle socio-economic status, low socio-economic status and upper middle socio-economic status of the elderly, lower middle socio-economic and upper middle socio-economic status of the elderly at any level of significance. When the groups are compared on their ability to walk independently on the road, the results indicated significant between the low socio-economic status and above upper socio-economic status, lower middle socio-economic status and above upper economic status, and upper middle socio-economic status and above upper socio-economic status of the elderly at 0.01 level of significance. No differences were found between the groups of elderly low socio-economic status and lower middle socio-economic status, low socio-economic status and upper middle socio-economic status, and lower middle socio-economic status and upper middle socio-economic status of the elderly at any level of significance.

When the item of taking medication oneself is compared between the various groups of the elderly socio-economic status, the results indicated significant difference between the low socio-economic status and above upper socio-economic status, lower middle socio-economic status and upper middle socio-economic status, lower middle socio-economic status and above upper socio-economic status of the elderly at 0.01 level of significance. The difference also found between the low socio-economic status group and upper middle socio-economic status group at 0.05 level of significance. No differences were found between the groups of lower socio-economic status and lower middle socio-economic status, upper middle and above upper socio-economic status of the elderly at any level of significance.

With regards to the item of using of phone independently, the comparison between the various elderly socio-economic status groups,

showed significant difference between low socio-economic status and upper middle socio-economic status, low socio-economic status and above upper socio-economic status, lower middle socio-economic status and upper middle socio-economic status, lower middle socio-economic status and above upper socio-economic status, and upper middle socio-economic status and above upper at 0.01 level of significance. However, no difference is found between the groups the low socio-economic status and lower middle socio-economic status of the elderly at any level of significance.

In case of the item on the household activities (housekeeping, cooking, etc.), the comparison between the various elderly socio-economic status groups of the elderly, showed significant difference between the low socio-economic status and above upper socio-economic status, and upper middle socio-economic status and above upper socio-economic status of the elderly at 0.01 level of significance. No differences were found between the low socio-economic status group and lower middle socio-economic status group, lower middle socio-economic status group and upper middle socio-economic status group, lower middle socio-economic status group and above upper socio-economic status group of elderly at any level of significance.

In the activity of handling money is concerned for the elderly, the comparison between the various socio-economic status groups, showed significant difference between the low socio-economic status and upper middle socio-economic status, low socio-economic status and above upper socio-economic status, lower middle socio-economic status and above upper socio-economic status of the elderly at 0.01 level of significance. Difference also found between the upper middle socio-economic status group and above upper socio-economic status group of the elderly at 0.05 level of significance. No statistically significant differences were found between the groups of low socio-economic status and lower middle socio-economic status, and lower middle socio-economic status and upper middle socio-economic status of the elderly at any level of significance.

Lastly, the comparison between the various elderly socio-economic status groups on their ability to perform and have interest in personal appearance, showed significant difference between the groups the low socio-economic status and upper middle socio-

economic status, low socio-economic status and above upper socioeconomic status, lower middle socio-economic status and above upper socioeconomic status, and upper middle socio-economic status and above upper socio-economic status of the elderly at 0.01 level of significance. However, no differences were indicate between the groups of low socio-economic status and lower middle socioeconomic status, and lower middle socio-economic status and upper middle socio-economic status of the elderly at any level of significance. From the mean scores, it can be seen that the low socioeconomic status elderly group has more problems in performing the activities of daily living and the above upper group has the least numbers of problems in performing the ADL among the various elderly socio-economic groups.

Multiple Regression Analysis: Prediction of Factors Contributing to Activities of Daily Living

Table 4: Multiple regression analysis for the predictors of activities of daily living

S. No	Variables	R	R²	ΔR²
1	Physical Activities	.532	.273	.000
2	Physical Functions	.687	.472	.199
3	Comparison with others	.778	.605	.133
4	Leisure Activities	.789	.623	.018
5	Optimism about Life	.800	.640	.017
6	Socio-Economic Status	.804	.646	.006
7	Age	.805	.648	.002
8	Family Type	.807	.651	.003
9	Social Support Networks	.808	.653	.002

Multiple regression analysis (Table: 4) explains the amount of variance in ADL that can be explained by independent variables. For example, physical activities of the elderly explained 27.3 percent of the total variance. When physical functions was entered into the regression model along with physical activities a significant increase of .119 was obtained in the R² and these variables accounted for 47.2

percent of the total variance for ADL. When the variable “comparison with others” was entered into the regression model along with physical activities, and physical functions, a significant increase of .133 was obtained in the R^2 . These variables accounted the 60.5 percent of the total variance of ADL. Table 4 shows that when each variable was subsequently entered into the analysis, each explained significantly more variance in ADL.

Discussion

Physical fitness and ADL are strongly related. A person who is fit physically will be able to perform ADL without difficulty. ADL refer to those basic essentials activities which are required for everyday living and include eating, bathing, and dressing, toileting, taking interest in personal appearance and taking medication independently. The person who is unable to perform these activities often needs help from others human beings, mechanical devices or both. Measurement of activities of daily living is important as it gives us information about the functional status of the person. In the present study the Activities of Daily Living Scale was used which was developed by the researchers along with the principal investigator, to determine the degree to which the elderly may be adversely affected in these activities on a daily basis.

Marital status, educational level, and socio-economic status, seem to have strong impact to the elderly person's ability to carry put activities of daily living. Here it was observed that as the age increases so does the difficulty to perform activities of daily living. A comparison on marital status showed that the married group was most comfortable with activities of daily living. However, there was not much difference between the single and widowed elderly. Performing the activities of daily living was better with increasing socio-economic status. It can also be interpreted that the higher the socio-economic status of the elderly, the lesser the difficulties and limitations to perform the ADL. It was also observed that the elderly who have better education (not necessarily the highest education) were able to

easily perform the activities of daily living better than the ones who had no or little education.

Daily physical activities, physical functions, comparison with others, leisure activities, optimism about life socio-economic status of the elderly, age factors, family type (whether from the nuclear and joint family system) and social supports are found to be strong predictors of activities of daily living of the elderly. From the results of the study, it can suggest that as marital status, socio-economic status and educational level of the elderly have strong bearings on the ability to perform the ADL. Community and institutional schemes (governmental plans, policies, schemes, etc.) should be made available to reach out to those who are widowed, have no education, and are in the low socio-economic strata.

In the developing countries, where there are not many policies for the elderly, the low educational groups are more likely to be in the lower socio-economic strata, and are more likely to be widowed earlier than others. These characteristics of the developing countries ensure fewer opportunities to access to the health facilities. The disturbing findings was while 26 percent of the rural women required help with activities of daily living, only 4.34 percent were getting such help (Prakash, 2003). Problems with ADL could be closely related to subjective well being, sex and social support apart from economic variables and age. Cognitive and mobility problems are also potential factors that increased the problems of performing the activities of daily living.

In this regards, the double jeopardy effects are likely to hit hardest to this section of the people. Any policies for the welfare of the elderly persons needed to reorient towards the most vulnerable people of the society.

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Researching the Health Needs of Elderly Indian Migrants to New Zealand

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ABSTRACT

The older adult population in New Zealand is increasing and becoming more ethnically diverse. With this change comes a requirement for health and social service professionals to become more knowledgeable about the cultural needs of their clients and to provide care that is cognisant of language, culture and religion. Indians have a long history of settlement in New Zealand; however this has not been reflected in policy or service provision. The reasons for this include a focus on the bicultural relationship with indigenous Māori and a relatively small Indian population. The Immigration Act 1987 has led to an increase in the cultural diversity of migrants and the number of Indians. Policy has not kept pace with demographic changes and there is a need to develop the health sector to work with Indians and other migrants. This article begins by tracing the changing demographics of age and ethnicity in New Zealand and the relationship with migration policy. Indian history, settlement and health in New Zealand are explored then a brief overview of existing research is presented along with the identification of gaps and recommendations for an expansion of current health research and practice agendas such as cultural safety and ethnicity data collection.

Keywords: Indians, health, settlement, Asian, older adults, New Zealand

The 2001 New Zealand Census highlighted significant trends in the ageing population; including the proportion of elderly would rise and that they would become increasingly diverse (Ministry of Social Development, 2001). There are now approximately 495,000 people

aged 65 years and over in New Zealand, accounting for 12% of the total population with the majority of this group women. In comparison with the under-65 population, the elderly population is less ethnically diverse, the result of a migration policy that has privileged migrants of working age with skills or who are entrepreneurs, and the unrestricted access to New Zealand by British migrants until the mid-1970s. Twenty nine percent of older people were born overseas, compared with 22% those aged under 65 with 14% of people aged 65 and over were born in the United Kingdom or Ireland, compared with 4.9% of the under-65 population (Ministry of Social Development, 2001).

This demographic is set to change again with the number of Asian (defined as from the Asian continent excluding central Asia and middle east) people aged 65 years and over projected to reach 55,000 by 2021. This is five times the 2001 population of 11,000 and, by 2010, older adults will account for 9% of all Asian people, compared with 4% in 2001. It is argued that the category 'Asian' lacks specificity and masks not only diverse languages, cultures, religious and political backgrounds but social and health needs as well (Workshop Organising Team, 2005).

The increase in ethnically, religiously and culturally diverse older adults will require health and social service professionals to become more knowledgeable about the cultural needs of this group and to provide care that is cognisant of language, culture and religion.

In 2001, 93% of the older Asian population were born overseas which has implications for language proficiency and access to services. Research shows that English language proficiency is critical in successful settlement outcomes (Fletcher, 1999) and that learning a new language is particularly difficult for older immigrants (DeSouza & Garrett, 2005; Ho, Au, Bedford, & Cooper, 2002). Again, due to past migration policy and labour market demands, the majority of the older adult population are English language speakers, with 40,000 of older people (9%) being able to speak two or more languages (Statistics New Zealand, 2002b) and the proportion of multilingual speakers declining from 12% among 65–74 year olds to 7% among 75–84 year olds and 5% of people aged 85 and over.

The Indian community is a growing minority in New Zealand, making up the second largest group in the category 'Asian' (26%), while Chinese communities make up 44% of all Asians (Statistics

New Zealand, 2002a). Europeans/Pakeha (Māori name for European) make up 79.6% of the population, followed by New Zealand Māori with 14.5%, Pacific Islanders 5.6%, Chinese 2.2% and Indian 1.2% (Statistics New Zealand, 2002b). Within the Asian group, Indians had the second highest numerical increase in population between 1991 and 2001 (after the Chinese ethnic group), up 31,194 or 102%. Most of the population growth within Indian communities has been from overseas born Indians, with numbers rising from 20,517 in 1996 to 43,923 in 2001 an increase of 23,406 (Statistics New Zealand, 2002a). In contrast, the population of New Zealand-born Indians rose from 9,501 in 1996 to 17,550 in 2001 an increase of 8,049 people.

Indian New Zealanders: Context

Indian-New Zealanders are highly qualified and more likely to receive income from wages and salaries than the total New Zealand population and are as likely as the overall New Zealand population to receive income from self-employment thus Indians have the second highest median annual income among the Asian ethnic groups, are involved in white collar employment and, at 77%, have the highest labour force participation rate of all the Asian ethnic groups (Statistics New Zealand, 2002a). This results in a relatively high level of home ownership (41%), and view of successful settlement. This profile of Indian New Zealanders is a recent development, early Indian migration was primarily derived from two rural areas of India, Gujarat and Punjab, and arrivals were mainly traders, farmers, artisans or small businessmen (Tiwari, 1980).

The Indian connection with New Zealand began in the late 1800s through Lascars (Indian seamen) and Sepoys (Indian soldiers) on British East India Company ships that brought supplies to the Australian convict settlements. The earliest Indian to arrive in New Zealand is thought to have jumped ship in 1810 to marry a Māori woman. The Indians that followed came mainly from Gujarat and Punjab, areas of India which had been exposed to emigration, and were driven by economic factors. Initially Indians were considered British subjects and could enter New Zealand freely. This changed with the passing of the Immigration Restriction Act 1899.

Indian migration increased until 1920, when the New Zealand Government introduced restrictions under a 'permit system' (Museum of New Zealand: Te Papa Tongarewa, 2004). In 1926, the White New

Zealand League was formed as concern grew about the apparent threat that Chinese and Indian men appeared to present in terms of miscegenation and alien values and lifestyle. Discrimination against Indians manifested in restrictions around joining associations and accessing amenities such as barbers and movie theatres. By 1945, families (mostly of shopkeepers and fruiterers) were getting established and marriages of second-generation New Zealand Indians were occurring. As well as Gujuratis and Punjabis, smaller numbers of Indians came from locations such as Fiji, Africa, Malaysia, the Caribbean, North America, the United Kingdom and Western Europe. The proportion of Fiji-born Indian immigrants to New Zealand rose significantly as a result of the Fijian coups of 1987 and 2000 (Swarbrick, 2004).

Indians have largely managed to evade the anti-Asian sentiment directed toward Chinese communities in New Zealand. Indians are mostly seen as positive contributors to the New Zealand economy and elements of Indian culture have been readily consumed in the form of festivals, food and restaurants. Furthermore, Sari material, yoga, mendhi, ayurvedic medicine and Eastern spirituality have joined the list of consumables that many New Zealanders enjoy without understanding their social, political, cultural and spiritual significance (DeSouza, 2004).

Despite this consumption of 'Indianness', little emphasis has been accorded to visibly different migrants in the debates over citizenship, which have become critical over recent years in New Zealand. These debates have emerged in part through a renaissance in Māori sovereignty, increased migration. They are related to the global rise in indigenous movements in the 1970s that have seen the re-positioning of Māori as indigenous to New Zealand and the evolution of a bicultural nationalism (Roscoe, 1999). Critics such as Thakur (1995) argue that the official rhetoric recognises the legitimacy of Māori and Pakeha but excludes migrant cultures that are non-white and non-indigenous. Therefore, there is a need to acknowledge diversity and build policies that accommodate and capitalise on the diversity that older people present (Ministry of Social Development, 2001).

Research and service provision

Service gaps have been identified in a report commissioned by the New Zealand Immigration service (Ho, Cheung, Bedford, &

Leung, 2000), which found that migrants had four areas of need: everyday needs, learning English, employment, and supportive connections. Since this report was published, a range of settlement programmes have been established in the Auckland region (where half of the migrant population resides and where one in three residents is born overseas) to assist with these areas of need. However, what health innovation exists comes from advocacy from community groups and volunteers, rather than being driven from the top by policy.

Another area of concern is the future care of an aging ethnically diverse population who may require care outside the home. Kiata, Kerse, & Dixon (2005) argue that little is known about the experiences of people who live and work in long term care facilities in New Zealand. Evidence shows that the private sector is becoming more significant in delivering health care to the elderly and the New Zealand government has identified older adults as a significant group who are highly likely to require support from health disability and social services (Kiata et al., 2005). As the number of ethnic elders increases it is likely that they will utilise such services. Kiata et al. (2005) shows that 28% of people over 85 live in long-term residential care and, based on the population projections, more Asians and other ethnic groups will potentially become users of such services. This in turn will increase the demand for care that is appropriate for each ethnic minority group (Kiata et al., 2005).

There is a growing body of research concerning the health of Asian people living in New Zealand and this is largely the result of lobbying by community organisations such as the Asian Network and the Asian Public Health Service. However, little is known specifically about the Indian elderly. The Asian Public Health Service commissioned a report to systematically examine the data collected from over 1,200 Asian participants in the 2002/03 National Health Survey funded by the Ministry of Health (Scragg & Maitra, 2005). This survey provided the opportunity to examine health status in a large representative sample of Asian people, and in particular to examine health status within Asian communities such as South Asians, within which Indians are subsumed. The key findings reveal that South Asians had the highest rates of obesity, were more likely to be overweight and obese than other Asian people and have significantly higher rates of diabetes and asthma than the overall population. South

Asians also have a higher prevalence of treated high cholesterol and diabetes.

Physical activity is thought to be one of the main protective factors against a wide range of diseases including cardiovascular, diabetes and some cancers, however, South Asians (and South Asian women in particular) had the lowest rate of physical activity, which makes for sobering reading.. In terms of housing, South Asians were more likely to live in the low socio-economic areas than other Asian people (Scragg & Maitra, 2005).

Other survey data from Scragg & Maitra (2005) considers Asians as a homogenous group and notes some findings that are a cause for concern:

- Asian people were less likely to have visited a health practitioner (or health service) when they were first unwell than other New Zealanders.
- Asian people were less likely than Europeans to visit a health practitioner (doctor, specialist, nurse or complementary healer) about a chronic disease.
- Asian women were less likely to have had a mammogram or cervical screening test in the last three years than other New Zealand women.
- Asians were less likely to use any type of telephone helpline than all New Zealanders.
- Asians tended to visit their GP only for a short term illness or a routine check up, and were less likely than other New Zealanders to visit after an injury or poisoning or for mental or emotional health reasons.

Expanding health practice and research agendas

Invariably, given the relatively small population size, Indians in New Zealand are aggregated together with other ethnic groups; however, there is a need for research that investigates and policy that informs the health status of Indians in New Zealand. Duncan, Schofield, Duncan, Kolt, & Rush (2004) argue that despite their population growth, Asian ethnic groups have been largely neglected by New Zealand health and research policies. They provide an instance of both over sampling and separate analysis of Māori and

Pacific Island children in the 2002 National Children's Nutrition Survey, while Asian children were subsumed with New Zealand Europeans. Large-scale studies are needed to determine health risk across all major ethnic groups in New Zealand, which will in turn enable development of ethnic-specific data. Even more critical is the need for data concerning ethnic variation in other areas of health so that effective interventions can be developed and implemented (Duncan et al., 2004). This omission and exclusion is by no means a rare occurrence in national surveys and prevents the development of an understanding of the public health needs of Asian communities in New Zealand. Such an understanding is necessary for the development of appropriate preventative health strategies, which Scragg and Maitra's (2005) examination of the National Health Survey suggests is needed, showing that Indians in New Zealand have different health priorities to other ethnic groups.

Expanding health practice and research agendas

Researchers and practitioners need to develop an evidence base to guide health service development and provision. This in turn must lead to the expansion of the bicultural policy imperatives, so that the needs of the growing multi-ethnic and religious communities in New Zealand are considered.

There is a paucity of research focussing on older migrants and refugees. Indians are often subsumed into the category 'Asian' and little is known of the experiences of elderly Indians who accompany their skilled children to New Zealand, whereby losing their peer groups and networks in the process. There are support agencies available that offer companionship and support but only to those already engaged in community and social organisations. Research among migrant Indians has identified health problems related to acculturation and lifestyle changes such as reduced physical activity, dietary changes and isolation which can result in diabetes, cardiovascular disease and mental health problems. It is thought that elderly Asians are vulnerable to mental health problems and suicide because of poor language skills, limited support networks and isolation (Ho et al., 2002). Research is also required into barriers and facilitators of health maintenance.

Future research offers some possibilities for rectifying this gap. A new longitudinal study of New Zealand children and families is being

developed by the Ministry of Social Development (MSD) with the support of the Health Research Council of New Zealand (HRC). The study is currently being investigated with a view to informing the government about whether to invest in the study, which would continue for up to 25 years.

Accurate ethnicity data collection is required. The New Zealand Health Strategy (Ministry of Health, 2000) guides the development and provision of new services in the health and disability sector to improve the health of New Zealanders. The strategy aims to reduce inequalities in health status for Māori, Pacific peoples and people from lower socio-economic groups. One of the ways to do this is to focus on quality, as to ensure that health outcomes are improved and health disparities reduced through several mechanisms, primarily information management and technology. Improving the quality of information assists health outcomes by providing timely and relevant clinical information. Providing communities with better access to information about their health or health care services can contribute to improved decision-making regarding local health services. A standardised national approach to ethnicity data collection is being used and the Health and Disability Sector Ethnicity Protocols (Ministry of Health, 2003) have been developed to assist in this which will go some way to providing more information about the needs of growing ethnic communities, however evidence to date has been that in practice, data has not been collected accurately (Klajakovic, 1993; McLeod et al., 2000; McPherson, Harwood, & McNaughton, 2003; Ministry of Health, nd).

Expanding the bicultural framework to a multi-cultural framework is necessary. Despite the significant shift in our ethnic make-up, New Zealand has yet to encompass multiculturalism as a social policy framework. According to Bartley & Spoonley (2004), this is because the United Kingdom and Ireland have traditionally been New Zealand's source of migration, which in turn has shaped the development of activities and concerns (as they argue, racist and Anglocentric assumptions of a colonial New Zealand) and, when the time did come to explore issues regarding the nation and nationality, this coincided with a rise in concerns over indigenous rights and the Treaty of Waitangi (signed by and defining of the relationship between Māori as the indigenous people of Aotearoa/New Zealand and Pakeha

(European), New Zealand's founding document. Thus while countries such as Canada and Australia was developing multicultural policies, New Zealand was debating issues of indigeneity and the relationship with tangata whenua (Māori). As a result, New Zealand has yet to develop a locally relevant response to cultural diversity (multiculturalism) that complements or expands on the bicultural (Māori and Pākehā) and Treaty of Waitangi initiatives that have occurred (Bartley & Spoonley, 2004).

Cultural safety needs to encompass new and growing ethnic communities. Durie (1994) suggests that the contemporary application of the Treaty of Waitangi involves the concepts of biculturalism and cultural safety, both of which are at the forefront of the delivery of health services. Cultural safety encompasses both a conceptual framework for understanding the power inequalities that structure the relationships between Māori and health professionals and practical strategies that can be utilised. This means incorporating the "principles of partnership, participation, protection and equity" (Cooney, 1994, p.9) into the care that is delivered. There is an expectation that health professionals in New Zealand will ensure that care is culturally safe for Māori. Cultural safety needs to be expanded to apply to any person or group of people who may differ from the health professionals because of socio-economic status, age, gender, sexual orientation, ethnic origin, migrant/refugee status, religious belief or disability (Ramsden, 1997). However, the focus has largely been on the relationship between Pākehā and Māori, rather than migrants (DeSouza, 2004) and other communities (Giddings, 2005).

Conclusion

Indian communities have played a significant part in the development of New Zealand, in particular from a labour market point of view, migrating as traders, farmers and more recently professionals and business people. However, they are largely invisible in health policy and practice. There is a need for responsive health, disability and social services. In addition there are significant gaps in the knowledge about the health status of Indian communities in New Zealand. This prevents the development of appropriate policy, service development and interventions, made worse by the lack of robust New Zealand data. Research within Asian communities has largely been driven from the communities themselves, through their lobbying to the

Ministry of health and funding of research. There is a need for some strategic momentum and for a concerted research agenda to be developed. The analysis of the 2002-2003 New Zealand Health Survey data goes some way towards highlighting some of the areas where Indian health priorities differ from those of other populations and where interventions are required. While the Indian population in New Zealand is currently comparatively youthful, there is a need for some future planning to develop appropriate and responsive services.

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