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Endogenous Activity of Glutamate Dehydrogenase from Different Tissues of Mice at Various Postnatal Ages: Effects of Substrates and Co-substrates on the Activity of the Enzyme from the Liver of Two Ages

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ABSTRACT

Glutamate dehydrogenase (GDH) an enzyme which catalyze the reversible formation of glutamate from α -ketoglutarate, occupies a central position in mammalian nitrogen metabolism since the reaction which it catalyze provides the major pathway by which ammonia become bound to the α -carbon atom of an α -ketoacid to generate glutamate. A comparative study on the specific activity (U/mg) of GDH was assayed in various tissues and at different postnatal ages of normal mice. The result showed higher activity in the lower age group for most of the tissues under study. However, the brain enzyme exhibited increased activities at mature stages, indicating an age- and tissue-specific pattern of distribution. Effects of substrates and co-substrates studies of partially purified GDH, including isolation and purification of the enzyme from the mice liver tissue are also reported.

Key words: GDH, Endogenous level, Specific activity.

Glutamate Dehydrogenase (GDH) occupies a central position in mammalian nitrogen metabolism since the reaction which it catalyzes provides the major pathway by which ammonia becomes bound to the α -carbon atom of an α -ketoacid to generate glutamate (Fisher, 1985). Glutamate dehydrogenase has been studied intensively because of its importance in nitrogen and carbon metabolism (Koppe, and Goetz, 1966, Timmerman, *et al.*, 2008) as well as its role in neurodegenerative disorders (Duvoisin, *et al.*, 1983) and hyperinsulinism-hyperammonemia (Stanley, *et al.*, 1998 and Yorifuji, *et al.*, 1998). Further, the activity of this enzyme is considered to be of major importance in the development of catabolic conditions leading to gluconeogenesis prior to birth (Timmerman, *et al.*, 2002). Much evidence has shown that the enzyme is widely distributed in various tissues, but that its expression levels and activity varies. RNA blotting analysis (Mavrothalassitis, G., *et al.*, 1988) have shown that the GLUD-related transcripts are ubiquitous in many of the mammalian tissues with liver and brain being the major sites of GLUD expression. However there are species differences; the intestine and heart are the major sites of GLUD-related MRNAs in rabbit but are moderate or minor sites in monkey and human. Further it was shown through immunoblotting analyses that GDH expression in the brain, heart, liver, stomach and muscle was higher compared to those in the lung and testes, an indication that GDH expression is tissue-specific (Jang, H.S., *et al.*, 2003).

GDH activity in vitro is affected by several factors ranging from pH, temperature to substrate and co-factors concentration. It has been reported that adenosine diphosphate (ADP), the allosteric activator of GDH promotes aggregation of the enzyme in solution thereby activating it, presumably by facilitating the opening of the catalytic cleft (Banerjee, S., *et al.*, 2003). In mammals, the activity of GDH is primarily regulated by guanosine triphosphate (GTP) through allosteric inhibition (Stanley, *et al.*, 1998), observed that mutation in the GDH gene at exon 12 within the GTP-binding site, i.e. at positions corresponding to amino acids between Ser-445 and His-454 leads to a loss of the GTP-binding site. Enzymatic characterization of the mutant GDH enzyme results in normal basal activity accompanied by diminished allosteric inhibition by GTP. This loss of GTP inhibition

of the enzyme leads to *Hyperinsulinism-hyperammonemiasyndrome* (HHS), a condition characterized by elevated levels of insulin and ammonia. Similar findings have been reported (Cho, S.W., *et al.*, 1996 and Yorifuji, T., *et al.*, 1999) on HHS, with mutation occurring outside the GTP-binding site, with elevated enzyme activity and a normal response to allosteric modulators ADP and GTP.

The authors therefore, think that a study on the endogenous level of the enzyme and also the effects of the various substrates as a function of age would provide some meaningful insight into its level of distribution and behaviour at varied age groups.

Materials and Methods

Materials: α -ketoglutarate, nicotinamide adenine dinucleotide reduced (NADH), nicotinamide adenine dinucleotide phosphate reduced (NADPH), adenine diphosphate-disodium salt (ADP), Guanosine triphosphate (GTP) were obtained from Sigma Chemicals, USA. Ammonium acetate, ethylenediaminetetraacetic acid-disodium salt (EDTA), tris (hydroxymethyl) aminomethane (tris buffer) and imidazole were obtained from Sisco Research Laboratories and Hi-Media, India.

Preparation of enzyme extract: Male Swiss-albino mice of the various postnatal ages were sacrificed as per the Institutional Animal Ethical Committee and the organs were quickly removed and washed in ice-cold 0.09 per cent saline solution. A 20 per cent (w/v) homogenate of the minced tissue in 25 mM Sucrose tris-HCl, pH 7.4 was prepared by homogenizing in a borosil homogenizing tube with a motor driven pestle in cold. The homogenates were then centrifuged at 800–1,000 x g in a Sigma 3K30 cooling centrifuge for 15 min at 4°C. The supernatant obtained was further fractionated twice at 14,000 x g for 20 min at 4°C. The mitochondrial pellets obtained were then suspended in a 25 mM Sucrose Tris-HCl, pH 7.4 containing Triton X-100 (0.05% final concentration) and used for enzyme assay.

Enzyme Assay: GDH activity was assayed according to the procedure of Wrzeszczynski and Colman (1994) with slight modifications. The change in absorbance per minute (ΔE) was monitored spectrophotometrically at 540 nm in a Cary 50 Bio UV-visible Spectrophotometer (Varian, USA), in the direction of reductive

amination of α -ketoglutarate in a medium containing the following final concentrations; 84.7 mM imidazole buffer (2.5 ml) pH 7.9, 217 mM ammonium acetate (50 μ l), 0.12 mM NADH (30 μ l), 0.9 mM EDTA (100 μ l), and 1.7 mM ADP (50 μ l). The reaction was initiated by the addition of 200 μ l of α -ketoglutarate to a final concentration of 13.6 mM. A unit of GDH is defined as the amount required to oxidise 1 μ mol of NADH/min at 25°C. Protein concentrations were determined by the dye binding method of Bradford (1976) using bovine serum albumin as reference standard.

Tissues and Age Specific Assay of GDH

GDH enzyme extracts from the various organs, namely the liver, kidney, brain and heart of immature (10 day old) through matured (90 day old) normal mice were separately assayed for specific activity according to the method mentioned in enzyme assay.

Effects of substrates, co-substrates and an inhibitor on GDH activity from the liver of the two age groups

(a) Effect of Substrates and co-substrates

Varying concentrations of α -ketoglutarate (0.1–6.5 mM), were used to determine the kinetic characteristics of purified liver GDH from the two ages. The effects of other co-enzymes NADH (5–200 μ M), NADPH (5–150 μ M) and the allosteric modulator ADP (0.0–2.0 mM) on the activity of the enzyme from the two ages was also determined. For each study only one parameter was varied at a time, other conditions being as in normal assay.

(b) Inhibition Studies

Various concentrations of GTP (0–50 μ M) were incubated with the enzyme in the presence and or absence of ADP for one hour in the cold. This was followed by normal assay of the preparations to assess the degree of inhibition by GTP on GDH activity. The result is expressed in per cent activity.

Result and discussion

The plots are represented by means which are a result of 4–5 separate experiments; standard error mean (SEM $\pm$), significant level

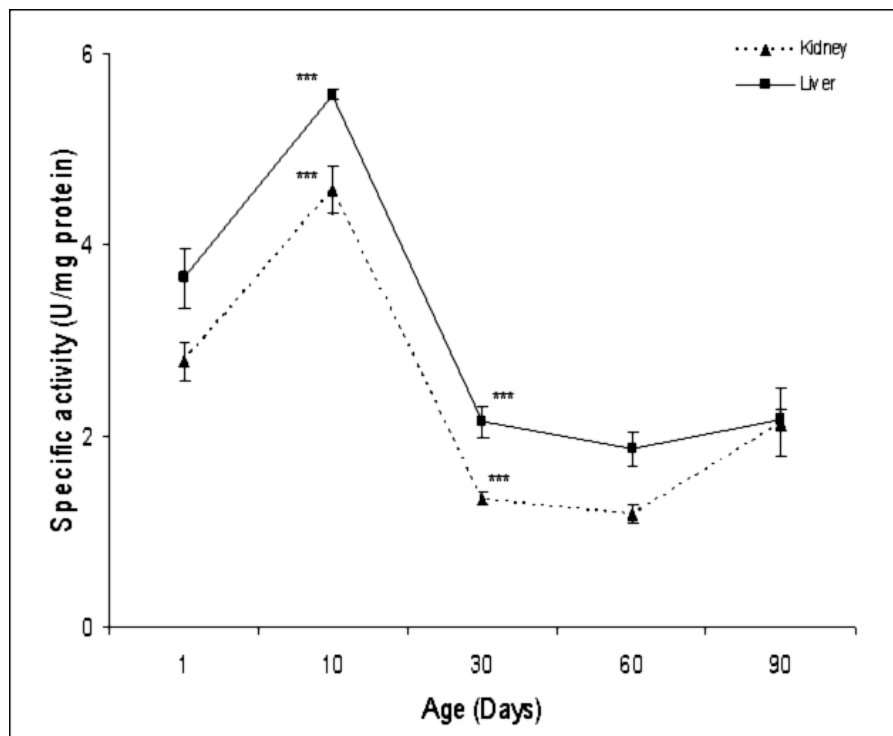
and percentage (%) increase or decrease ($\pm$) values. For all purposes, glutamate dehydrogenase used is extracted from the mitochondria and activities are expressed in terms of specific activity, i.e. the amount of enzyme that can catalyse 1 Fmol NADH per minute at 25°C and percentage activity with the highest taken as 100 per cent.

The specific activity of GDH exhibited an age- and tissue specific pattern of distribution with the highest activity observed in the liver, followed by the kidney, brain and heart.

In the liver tissue, there was a significant increase (52%) in the activity of GDH (5.7 U/mg) at day 10 compared to day 1 (3.65 U/mg). This was followed by a sharp decline (61%) at day 30 (2.15 U/mg) and no further significant changes was observed thereafter (Figure 1).

Figure 1

*Specific activity of mitochondrial GDH in the kidney and liver of mice at various postnatal ages. Results are means of 5 animals each, bars represents SEM ($\pm$) and *, **, *** are the levels of significance at $p < 0.05$, 0.01 and 0.001, respectively*



The increased GDH activity observed at the immature stages is possibly due to the role played by this enzyme in nitrogen and carbon metabolism especially in carbon supply for gluconeogenesis during the first 10-days after birth. This increase in liver GDH activity in this study coincides with the reported increase in mitochondrial DNA (MTDNA) content of the developing liver during the early postnatal period, indicating the increased metabolic activity at these ages (Prieur, B., *et al.*, 1998). In the rat, a relatively low activity of hepatic GDH activity has been reported with activity increasing just prior to birth (Fisher, F.H. 1985) coinciding with a rise in glucocorticoid level at that stage. The level of GDH activity, which is also considered as accessory enzyme to the urea cycle, also coincides to the rise of activity of arginine synthetase, which showed maximum activity at 10 day postnatally, (Raiha, and Suihkonen, 1968) which may serve as a possible indication of the role played by GDH in urea synthesis at the immature stages. Reports using histochemical analysis in developing marsupial liver have shown that by the 9th postnatal day large accumulations of glycogen were present in the majority of hepatic cells under observation and remained abundant for another 6 days or more (Krause, W.J., *et al.*, 1975).

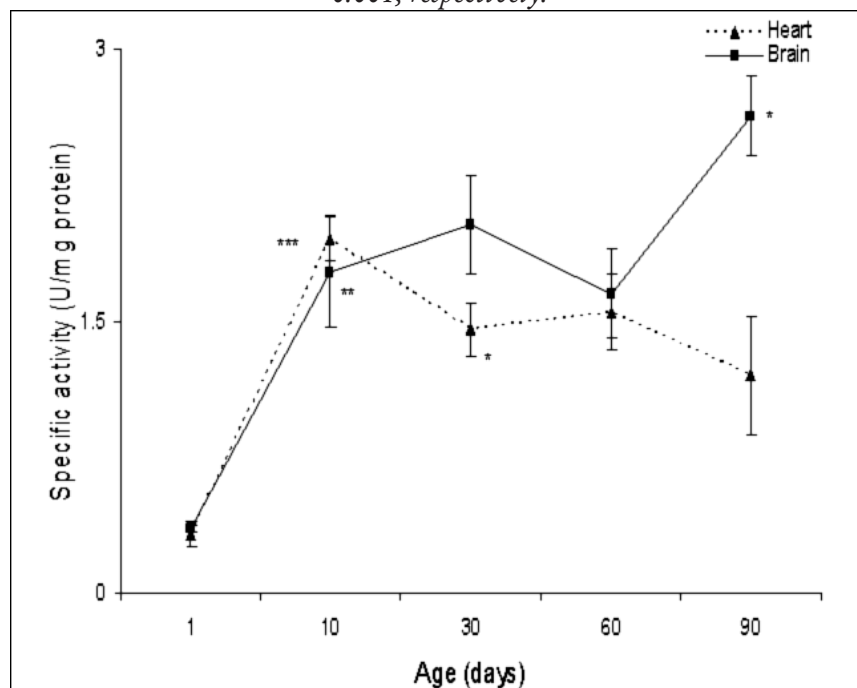
The level of activity of GDH in the kidney exhibited a significant increased during the first 10 days after birth, i.e. 4.57 U/mg as compared to 2.78U/mg at day 1 and decreases significantly (70%) at day 30. No significant changes were observed thereafter. The pattern of enzyme distribution was similar in both liver and kidney, with a rise in activity during the first 10-days followed by a significant decline to adult level thereafter, though GDH activity was comparatively higher in the liver (figure 1). Previous studies have shown that the kidney of the late foetus can synthesize glucose from either pyruvate or L-glutamate, although at a low rate and that developmental increases to above adult levels occur during the first 2 postnatal weeks (Zorzoli, A., *et al.*, 1969). In developing rat kidney, an active process of cortical cell proliferation and differentiation occurs as late as day 20. The medulla was the most immature zone at birth and displays the greatest morphological changes during this period (Márquez, M.G., *et al.*, 2002). In the rat kidney, several functions such as glucose and sodium reabsorption or gluconeogenesis appear at the end of the fetal

life and increases rapidly after birth (Geloso, and Basset, 1974; Delaval, E., *et al.*, 1979 and Lelievre-Pegorier, and Geloso, 1980). At the end of the fetal life, the mitochondrial oxidative properties are low, but reach 80 per cent of the adult values one day after birth (Delaval, E., *et al.*, 1990). The increased GDH activity at immature ages may correlate with the role played by this enzyme at these stages especially in terms of energy metabolism, more importantly during perinatal kidney differentiation; (Prieur, B., *et al.*, 1995) linking amino acid catabolism to the Krebs cycle.

The *brain* tissue exhibited an overall increase in GDH activity with the maximum activity observed at the mature stage. A significant increase (405%) in GDH activity (1.7 U/mg) was observed 10 days after birth. The activity further peaked to a specific activity of 2.63 U/mg, an 115 per cent increase at 90-day (figure2). This result is in agreement with earlier findings of Rotheet *al.*, (1983) who showed that a steep rise was observed in the activity profile of aspartate aminotransferase (AAT) and glutamate dehydrogenase in rat brain which was discussed as being a consequence of the maturation of preferably glutamatergic structures. These results points to a quantitatively significant participation of glutamate transmitter metabolism in the CNS. The GDH activity profile in the brain also coincides with the earlier reports, that glutamate transporter (GLT1) and high affinity glutamate transporters (GLAST) expression and GDH activity in astrocytes is associated with the formation of glutamatergic synapses, neuronal structures involving glutamate as transmitter in the astrocytes of developing rat hippocampus (Schmitt, and Kugler, 1999). Studies have also shown that cerebral oxygen consumption and the activity of the associated enzymes are low in fetal life and at birth, and then rise rapidly during the period of cerebral growth and development, and reached a maximal level at about the time maturation is completed (Timiras, P.S., *et al.*, 1973; Clarke, D.D., and Sokoloff, L. 1999). Whereas other studies have shown that in the CNS neurons, GDH expression was observed to be significant only at the mRNA level but not at protein level, suggesting that under normal conditions GDH in neurons is involved in the general ammonia metabolism rather than metabolism of transmitter glutamate (Schnitt, A., *et al.*, 1999).

Figure 2

*Specific activity of mitochondrial GDH in the brain and heart of mice at various postnatal ages. Results are means of 5 animals each, bars represents SEM ($\pm$) and *, **, *** are the levels of significance at $p < 0.05$, 0.01 and 0.001, respectively.*



The heart tissue exhibited a steep significant increase (502%) in the specific activity during the first 10 days after birth followed by a sharp decline (25%) at day 30 and no significant change was observed at later stages of development (Figure 2). It has been reported that mitochondrial content and enzyme activities are low in early fetal heart, and although enzyme content is similar in the late fetus and adult, mitochondrial enzyme activities increase two fold postnatally, indicating that fetal heart mitochondria become completely developed only during the postnatal stages (Rolph, T.P., *et al.*, 1982). GDH activity in this tissue also correlates with the observed transhydrogenase activity that undergoes two steep increases of activity, one at birth and another between 15 and 25 days postnatally (Andres, A., *et al.*, 1983). Several enzymes have been reported to increase their activity in this tissue which commensurate with their

role in energy metabolism at these ages. For instance it has been reported that, NADPH generating enzyme like the 'malic' enzyme (Andres A, *et al.*, 1980) and cytoplasmic thioredoxin undergoes increase activity at birth (Andres, A., *et al.*, 1983) which possibly coincide with the higher activity observed for GDH at this age, since this enzyme also generates NADPH during oxidative reactions. It has also been reported that the distinction between the left and right ventricular activities of lactate dehydrogenase, which is visually clear in adult guinea pigs, was observed to be absent in the fetus and appeared only during postnatal development, other examples include the palmitoyl carnitine transferase, an enzyme involved in fatty acid transportation in the mitochondria, the activity was reported to be low in the fetal heart continued to increase substantially during the first 2 wk after birth (Barrie, and Harris, 1977). The observed higher activity at the early postnatal age may be correlated with the increased energy demand as well as the biosynthetic activities in this tissue during the initial periods after birth.

Previous report (Arola, L., *et al.*, 1982) have also shown that GDH and most amino-acid enzymes (aspartate, alanine and tyrosine transaminases, serine dehydratase, glutamine synthetase, adenylyldeaminase and arginase) attained the adult levels early after birth or at weaning, showing a marked trend towards amino-acid nitrogen conservation during late foetal and specially during the neonatal period, increasing their activity during lactation. These changes are attributed to availability of low grade protein in diet as well as to maturation of amino-acid homeostasis maintenance for growth.

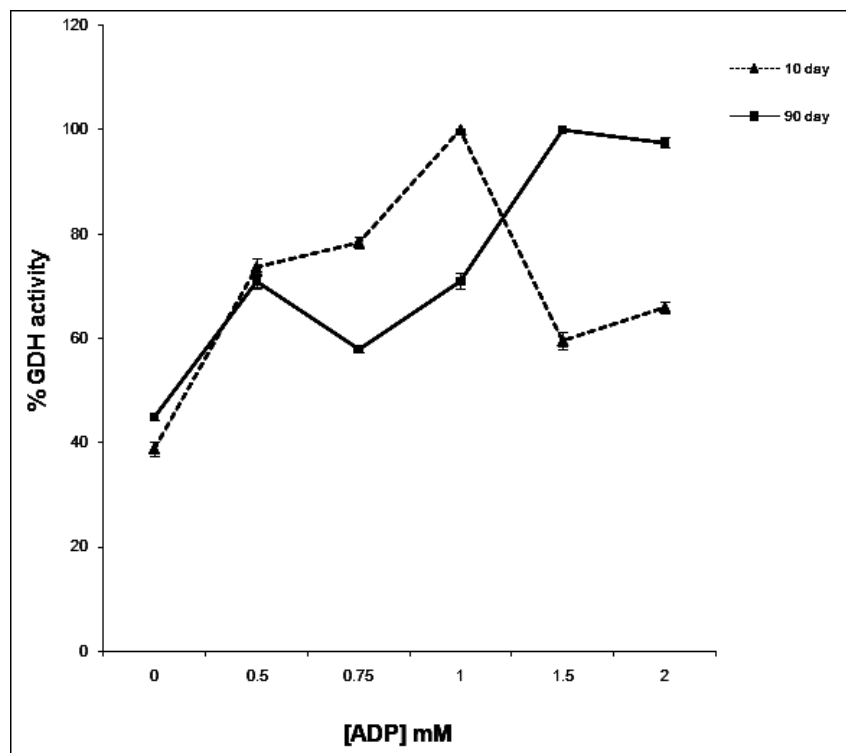
Effect of substrates and inhibitor on GDH activity

Adenosine diphosphate

In this study, ADP showed optimum enhancement at 1mM for the young and slightly more (1.5 mM) for the adult (Figure 3), indicating the sensitivity of GDH vis-à-vis the metabolic conditions and requirements at the two different ages. The reduced sensitivity in the adult mice to ADP activation has been attributed to a secondary modification of the GTP binding site, as the animal undergo development and/or ageing (Jacobson, and Colman, 1982). The ADP

Figure 3

Effect of ADP concentration on the activity of liver GDH in the two age groups. Details of the experiment are described in method section. Results are mean of 4-5 independent experiments



binding domain within two types of bovine brain GDH isoproteins (GDH I and GDH II) have been identified by photo affinity labelling (Cho, and Hye-Young, 1999). The functional areas and functional groups of bovine liver GDH have also been reported and it was suggested that the active sites and enzyme association sites are on different areas of the polypeptide chain (Hucho F., *et al.*, 1975). It has been shown that GDH undergoes aggregation and disaggregation under a variety of conditions including changes in concentration (Olson, and Anfinsen, 1952) and with aggregation there are reciprocal changes in the rate of oxidation of glutamate and other substrates (Tomkins, and Yielding, 1961). Other comparative studies using purified mitochondrial GDH from rabbit liver has shown that the

mitochondrial enzyme showed greater stimulation by ADP when compared to its cytosolic counterpart (Kazarian, R.A., *et al.*, 1985).

NADH and NADPH

The data obtained in this study showed that the optimum concentration of NADH was 125 μM and 150 μM for the young (10-day) and adult (90-day) mice respectively (Figure 4). Concentrations above these values result in an apparent inhibition of the GDH activity, probably because the enzyme dissociates into lower molecular weight molecule, an effect exerted by pyridine nucleotides when present at higher concentrations (Frieden, C. 1959a). On the other hand, the non-saturation or linear profile obtained (Figure 5) with varying concentrations of NADPH in GDH activity from both the ages may correlate with the earlier findings, (Frieden, C. 1959b) which demonstrated that NADPH cannot bind to the non-active site of the enzyme, as a result, it cannot cause dissociation of the enzyme nor can it displace ADP or ATP from the active site no matter how high the concentrations.

Figure 4

Effect of NADH concentration on the activity of liver GDH in the two age groups. Details of the experiment are described in method section. Results are mean of 4-5 independent experiments.

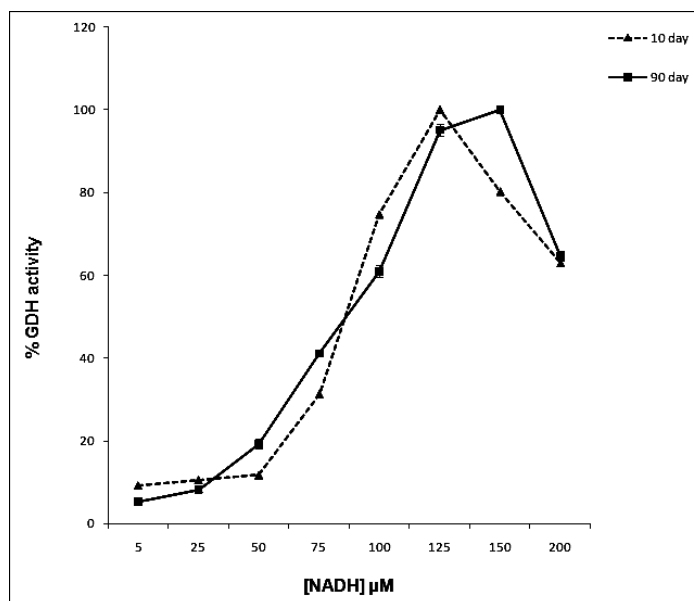
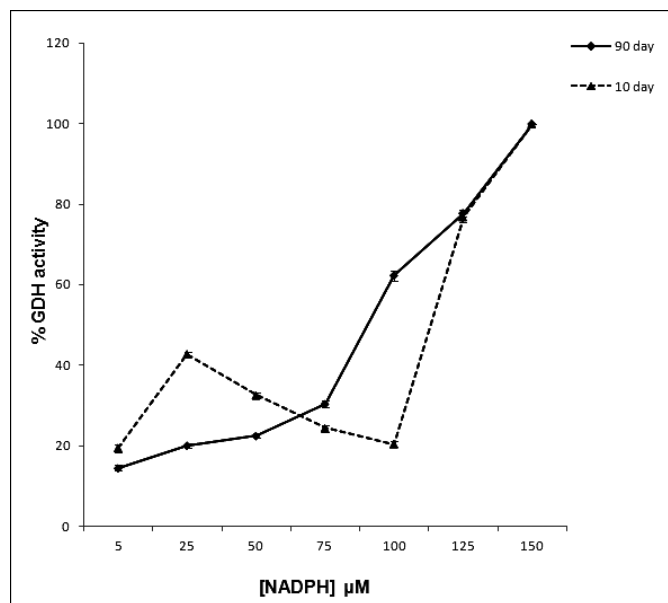


Figure 5

Effect of NADPH concentration on the activity of liver GDH in the two age groups. Details of the experiment is described in method section. Results are mean of 4-5 independent experiments.

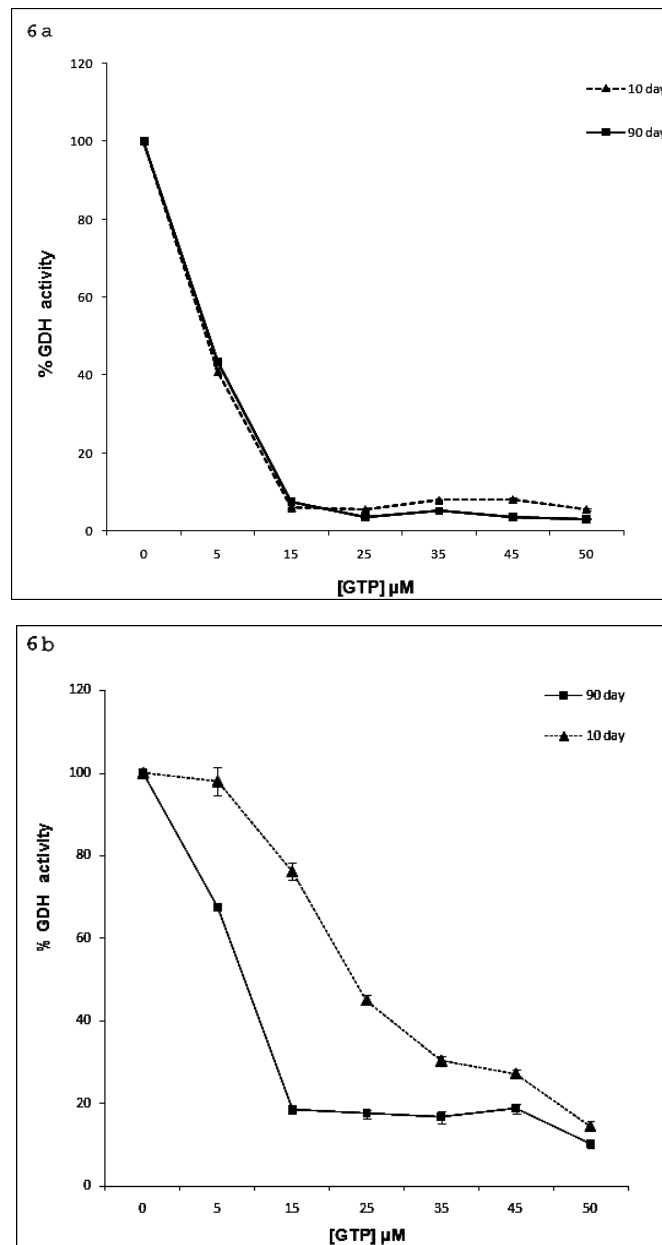


Inhibition Studies

GDH is known to possess binding site for GTP, an allosteric modulator which negatively influence this enzyme. In the absence of ADP, about 60 per cent inhibition of GDH activity in both ages was observed at 5 μM concentration (figure 6a); however, inhibition was minimized (figure 6b) in the presence of the allosteric activator, ADP (1mM). GTP and ADP binds to distinct sites on the enzyme (Colman, and Frieden, 1966) and it may be mentioned that loss of GTP inhibition by mutation in the GDH gene carrying GTP binding domain leads to increase GDH activity that result in excess insulin and ammonia production (hyperinsulinism and hyperammonemia syndrome) and excess ammonia/glutamate is the possible causes of some neurodegenerative disorders (Cho, S.W., *et al.*, 1996 and Yorifuji, T., 1999). From our studies, it is evident that the liver enzyme binding site for this modulator also remained unaltered with age.

Figure 6a and 6b

Effect of GTP concentration on the activity of liver GDH from the two age groups in absence of ADP [6a] and in presence of 1mM ADP [6b]. Details of the experiment is described in method section. Results are mean of 4-5 independent experiments.



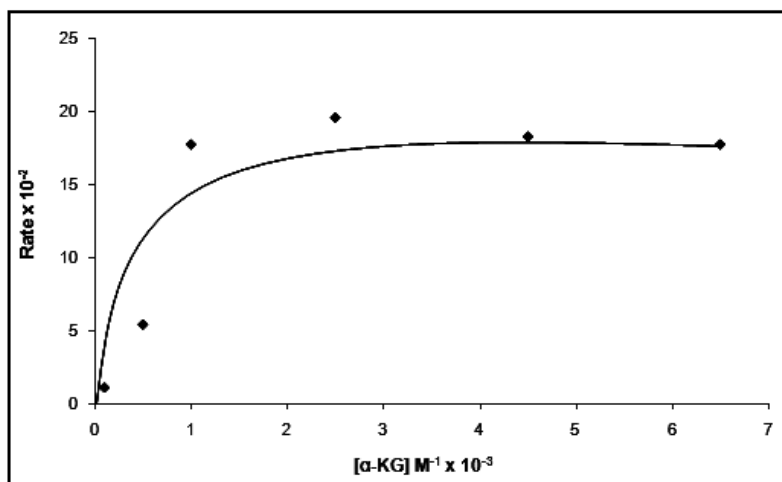
Kinetic Properties

GDH from the liver of immature and matured mice exhibits similar kinetic properties in terms of $V_{\max}$ and K_{cat} towards the

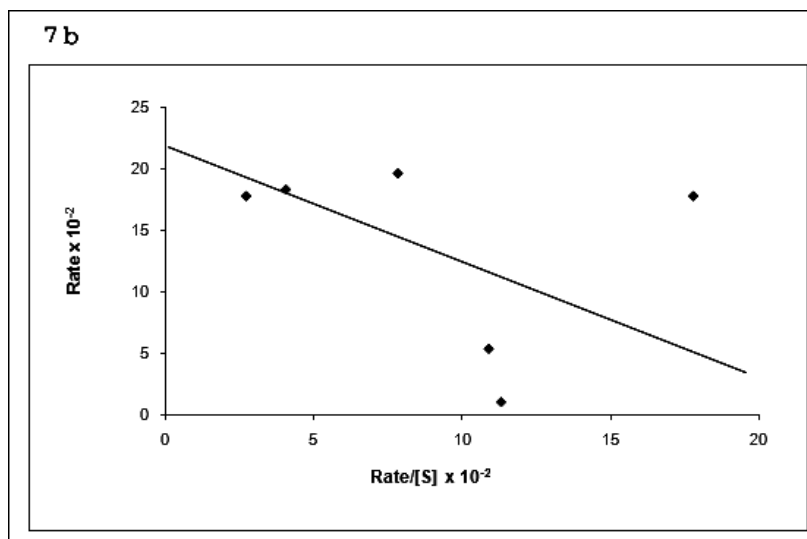
Figure 7a and 7b

Plot of V versus $[S]$ gives the Michaelis-Menten curve computed and drawn using the Enzfitter programme of Sigma [α]. Below is the Eadie-Hofstee transformation. The plot yields the K_m , K_{cat} and $V_{\max}$ values for liver GDH purified from 10-day old mice [7b].

7a



7b



substrate, α -ketoglutarate, as shown in Figure 7a and 7b and Table 1. However, they differ in their affinity for the substrate, with the enzyme from the immature mice showing higher affinity (low K_m) for the substrate compare to that of the matured mice. This is possibly a strong indication of the greater role of this enzyme in energy-related pathway during the developmental stages, in order to fulfill the intra- as well as extra-tissuedemands. The kinetic data obtained in this study may reflect the ionization state of the enzyme as has been suggested that the V_{max} and K_m for the GDH oxidation of glutamate is dependent upon ionization of a probable cysteine residue with a pKa of 7.7 to 7.8 (Rogers, K.S., 1971). There are several enzymes which have been reported to have altered kinetic property as a function of age (Sharma, R. 1988; Gafni, A. 1990 and Syiem, D. and Sharma, R. 1996).

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Social Connectedness in Ageing and Its Correlates: Emotional and Cognitive Health

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ABSTRACT

The purpose of the present study was to find out experiences of social connectedness with children and relatives, emotional health and cognitive well-being of 427 elderly (female=270 and male=157), age varying from 60 years and above. These subjects were administered individually a questionnaire, Montreal Cognitive Assessment scale (Marathi translation) and a test to measure symptoms of depression, anxiety and coping. The findings revealed the complex nature of relationship between social contact, cognitive and psychological wellbeing. Results may help establish the utility of social support setting apart socially connected cohorts from others, and underline possible cultural factors operating in India.

Key words: Ageing, Social connectedness, Depression, Anxiety, Cognitive well-being

To all appearances, social and emotional life does not seem to change largely with the process of ageing. People continue to do many of the things they were doing earlier when they were younger. Social networks may diminish a little as older people retire from an active occupation and restrict their daily activities as compared to their routine during their work life. As a result, their social role may

change, and they may meet and interact perhaps with fewer people across a typical day.

In an interesting study focusing on emotional experience, Carstensen, *et al.*, (2000) used an experience sampling procedure and studied one hundred and eighty – four people between the ages of 18 and 94 years. The measures focused on frequency of emotions experienced as well as their intensity, complexity, and consistency in everyday life. Interestingly, they found a curvilinear relationship between negative emotional experience and age. The graph plotted showed a curvilinear relationship, a U curve, as negative emotions declined in frequency in the age span before 60 years and then swung upwards again in later years.

However, another study in the Proceedings of the National Academy of Science (Weiss, *et al.*, 2012) showed a similar U shaped curve for another psychological variable, well-being, including happiness and mental health. Well-being was found to be high in youth, then it fell in midlife, and rose again in old age. Even more interestingly, this was a pattern seen not only in humans, but also among 508 great apes (two samples of chimpanzees and one sample of orangutans).

The reason for citing this surprising finding is the commonality we share across species in terms of social networks, giving the latter a biopsychosocial importance and evolutionary and survival value. This paper explores social support experienced by ageing persons in a sample from India and the relationship between support and several health parameters of the cohort.

Carstensen, *et al.*'s., study (2000) also showed that highly positive emotional experiences endured among older people, a finding which may perhaps point to a socio-emotional selectivity theory. Another interesting study by Levy (2009) focused on stereotype embodiment in ageing. The research study proposes that people assimilate stereotypes about themselves from the culture surrounding them, and this process leads to self-definition.

In other words, the stereotype gets internalized during the life span, and hence the aging process per se is a social construct. Other findings from the current study, reported elsewhere, focus on the

self-perceptions of the aging population studied, and interestingly it was found that many perceived themselves to be younger than they actually were (Wandrekar, *et al.*, 2017).

Charles and Carstensen (2010) clearly view aging as an adaptation and highlight the roles of resilience, well-being as well as emotional distress across adulthood. They endorse the life span developmental model which emphasizes specific processes and strategies that facilitate adaptive aging and point out the weaknesses in the unidimensional decline model of ageing which was held earlier. The factors that provoked this shift were the juxtaposition or the 'paradox' of clearly evident decrease in biological or physiological as well as cognitive capacity and yet a high level of general satisfaction and well-being in old age.

Esiri (2007) from Oxford, UK has summarized the changes that occur in the ageing human brain at macroscopic as well as microscopic levels. There is a modest loss of neurons and a reduction in size of remaining neurons, as well as of dendritic and axonal arborizations. Approximately over the age of 70 years, the ventricular system expands to occupy the space created by reduced brain volume and the subarachnoid spaces enlarge. High energy demands of neurons render them vulnerable to ageing, and there is an increase in production of advanced glycation end-products, which accumulate with age in many tissues. Some important conclusions of the work include the certainty that there is a decline in structure and function of the brain with age, but that the extent of these changes would vary subject to genetic and environmental influences. Hearteningly, this progressive decline may not be inevitable and may even, in future, be reversible, since there are findings that neurogenesis can persist into adulthood, and protective neurotrophic factors can be boosted with diet and exercise. They end the paper with the interesting quote 'The key questions with regard to ageing are whether the ageing process is in fact clock-driven and what evolutionary factors might have shaped the design of the clock Our answer to the question 'Is it a clock?' is a definite 'No.'

Nicholson (2012) and Freidler, *et al.*, (2015) have highlighted a very important threat to well-being in old age: loneliness. Nicholson calls social isolation an important but underassessed condition in old age, and Freidler *et al.*, have titled their work with an impelling phrase

‘One is the deadliest number’ and have focussed on the impact of loneliness on cognition.

The above research, taken together, suggests that there is a complex relationship between varied social, emotional and cognitive factors in the lives of the elderly, and more research needs to be done to explore the same. The researchers aim to explore some aspects of the same in the current study, which focuses specifically on the role of social connectedness in augmenting cognitive and emotional functioning in old age.

Methodology

Sample

427 subjects (270 females and 157 males), age varying from 60 years and above were randomly selected from Mumbai, Thane, Pune, Nashik, Ratnagiri and surrounding urban and rural areas in Maharashtra.

Description of the Sample

Out of the 427 participants, 270 (63%) were females and 157 (37%) were males. Their ages ranged from 61 to 95 years, and their mean age was 77 years. 315 (74%) were married, 19 (4.45%) were unmarried, 92 (21.55%) were widowed, and 1 (0.23%) was divorced. 140 participants (32.78%) and 139 participants (32.55%) were from Thane and Pune respectively, while 72 (16.86%) were from Mumbai, 19 (4.45%) were from Nashik, 11 (2.58%) were from Ratnagiri, and the other 46 (10.77%) were from other districts and villages in Maharashtra. 382 participants (89.46%) hailed from urban areas, 29 (6.79%) from semi-urban, and 16 (3.74%) from rural areas.

Tools Used

The subjects were administered individually the following tools:

- A. Questionnaire which consisted of specific questions about social connectedness. For example to understand the frequency of contact with their children, participants were asked – ‘How often do you have contact with your children?’ and 2 categories of responses were elicited – high contact (daily or weekly), and low contact (on occasions, rarely or not applicable if the respondents

did not have children). To understand the mode of contact with children, participants were asked – ‘How do you communicate with your children?’ and 2 categories of responses were elicited – face to face contact and phone or online contact. Similarly to understand the frequency of contact with their relatives, participants were asked – ‘How often do you have contact with your relatives?’ and 2 categories of responses were elicited – high contact (daily or weekly), and low contact (on occasions, rarely or not applicable if the respondents did not have children). To understand the mode of contact with relatives, participants were asked – ‘How do you communicate with your relatives?’ and 2 categories of responses were elicited – face to face contact and phone or online contact.

- B. Marathi translation of Montreal Cognitive Assessment Scale (Nasreddine, 2005) Thescal has 30 items and is completed in ten minutes. It measures short term memory, attention, language, executive functioning and orientation and is used to screen for cognitive impairment.
- C. Tool (based on items taken from the International personality items Pool) to assess the symptoms of depression, anxiety and coping behavior. This tool was also translated in Marathi language.

Written consent was taken from the respondents before the collection of data.

Statistical Analysis

Data was analysed using 2*2 ANOVAs for each of the dependent variables-coping, depression, anxiety and cognitive functioning, for mode and frequency of contact with children and mode and frequency of contact with relatives.

Results

Contact with children and emotional and cognitive health:

4 two-way ANOVAs were conducted to study the effect of frequency of contact with children (high and low) and mode of contact

with children (face to face and online/phone) on the MoCA, coping, anxiety and depression scores. Table 1 outlines the results of these.

Table 1
Results of four 2-way ANOVAs – effect of frequency and mode of contact with children on 4 variables

	<i>Main effect of frequency of contact</i>	<i>Main effect of mode of contact</i>	<i>Interaction effect</i>
MoCA	F(1, 424) = 2.11, n.s	F(1, 424) = 3.56, $p < 0.05$	F(1, 424) = 7.26, $p < 0.007$
Depression	F(1, 424) = 2.86, n.s	F(1, 424) = 3.21, n.s	F(1, 424) = 5.46, $p < 0.01$
Anxiety	F(1, 424) = 0.3, n.s.	F(1, 424) = 0.02, n.s	F(1, 424) = 0.91, n.s
Coping	F(1, 424) = 9.15, $p < 0.005$,	F(1, 424) = 0.74, n.s	F(1, 424) = 0.3, n.s.

Online/phone contact ($M=24.08$, $SD=6.75$) is associated with significantly better MoCA scores as compared to face to face contact with children ($M=22.82$, $SD= 5.83$). The best scores on the MoCA are associated with high frequency online contact, followed by high frequency face to face contact, and the worst scores are associated with low frequency face to face contact.

The lowest depression scores are seen for face to face contact at high frequency and the highest depression scores are seen for online/phone contact at low frequency.

Frequency of contact, mode of contact, and the interaction of the two, show no significant effect on anxiety levels.

High frequency of contact with children associated with better coping ($M=33.14$, $SD=6.98$) as compared to low frequency of contact ($M=30.48$, $SD=6.71$).

Contact with relatives and emotional and cognitive health

4 two-way ANOVAs were conducted to study the effect of frequency of contact with relatives (high and low) and mode of contact with relatives (face to face and online/phone) on the MoCA, coping, anxiety and depression scores. Table 2 outlines the results of these.

Table 2
Results of four 2-way ANOVAs – effect of frequency and mode of contact with relatives on 4 variables

	<i>Main effect of frequency of contact</i>	<i>Main effect of mode of contact</i>	<i>Interaction effect</i>
MoCA	F(1, 424) = 11.31, p < 0.0008	F(1,424) = 10.07, p < 0.001)	F(1, 424) = 0.3, n.s
Depression	F(1, 424) = 3.83, p < 0.05	F(1, 424) = 3.96, p < 0.05	F(1, 424) = 0.3, n.s.
Anxiety	F(1, 424) = 0.02, n.s.	F(1, 424) = 0.8, n.s	F(1, 424) = 0.35, n.s.
Coping	F(1, 424) = 2.56, n.s.,	F(1, 424) = 1, n.s.,	F(1, 424) = 0.76, n.s.

Low frequency of contact with relatives is associated with significantly poorer cognitive functioning ($M=22.58$, $SD=6.19$) as compared to high frequency of contact ($M=24.77$, $SD=5.68$), and online/phone contact is associated with significantly poorer cognitive functioning ($M=21.53$, $SD=6.6$) as compared to face to face contact ($M=23.72$, $SD=5.89$).

Low frequency of contact is associated with higher depression ($M=3.34$, $SD= 4.05$) as compared to high frequency of contact ($M=2.53$, $SD=3.19$), and online/phone contact is associated with higher depression ($M=3.77$, $SD=4.24$) as compared to face to face contact ($M=2.903$, $SD=3.69$).

Frequency of contact with relatives, and mode of contact with relatives, do not have significant effects on coping and on anxiety.

Discussion

Researchers have previously explored social contact and support using different ways and have found a difference between objective and subjective social connectedness (Cornwell and Waite, 2009). In this paper, we focus on objective social connectedness. Given the importance of ‘the family’ in a collectivistic culture such as India with children and relatives seen as crucial providers of social support, this paper focuses on contact with relatives and children, exploring the role of frequency of contact as well as mode of contact. Recognizing the different roles performed by children and relatives in one’s life, in our study we examined connectedness with them and the impact of the same separately.

Some recent research has examined the relationship between social isolation and connectedness and emotional and cognitive well-being and found this relationship to be strong but complex (Nicholson, 2012). In our study, we have found the same to be true.

Research has documented the role of social engagement in protecting against cognitive decline (Fratiglioni, *et al.*, 2004; Beland, *et al.*, 2005; both cited Nicholson, 2012). Seeman, *et al.*, (2001) hypothesized the role of three factors that contribute to this relationship. Social interactions are associated with better physical and mental health outcomes and these in turn affect cognitive outcomes; social interactions, if positive, are associated with reduced physical reactivity which reduces the risk of cognitive decline; social interactions themselves have cognitive components intrinsic to them, and the 'use it or lose it' paradigm explains why engaging in these interactions strengthens these cognitive skills.

In keeping with the above, we found that both frequency and mode of contact with relatives had a significant impact on the MoCA score, with high frequency of contact and face to face contact associated with better cognitive functioning as compared to low frequency contact and online/phone contact. It follows that keeping in touch with one's relatives and meeting them face to face often may be a protective factor against cognitive decline.

Interestingly, however, when it came to children, frequency of contact by itself had no main effect on cognitive functioning. The mode of contact had a stronger role to play, with online and phone contact actually associated with better cognitive functioning as compared to face to face contact. Furthermore, the interaction effects suggest that high frequency online or phone contact is associated with better cognitive functioning than high frequency face to face contact.

This interesting finding could perhaps be explained by the role that keeping abreast with technology plays on one's cognitive functioning. The changing nature of Indian societies with children expected to move abroad or in other cities for pursuing higher education or a better quality of life may require the elderly parents to actively embrace technology to keep in touch with them. Mellor, Firth and Moore (2008) reported studies (e.g. Oyozelek, 1991) that demonstrated that learning to use computers can lead to improved

scores on several cognitive variables. Learning to use computers and any form of new technology such as smart phones may require one to engage in new learning, use problem solving and reasoning, exercise fine motor skills, improve attention and working memory abilities. In keeping with the 'use it or lose it' paradigm, active use of these cognitive abilities may improve cognitive functioning.

However, when it comes to depression, a different pattern emerged. By themselves, both frequency and mode of contact with children did not have a main effect on depression, but the interaction effects were significant, with high frequency face to face contact associated with the lowest depression and low frequency online/phone contact associated with the highest depression.

We also found that both frequency of contact and mode of contact with relatives had significant effects on depression, with high frequency contact and face to face contact associated with lower depression as compared to low frequency contact and online/phone contact.

Research has long demonstrated the link between variables such as loneliness and social connectedness and depression (Singh and Srivastava, 2014, Vijayshri and Farooqi, 2014); however, the relationship has been seen as being complex. In our study, we found that just being 'in touch with' children and relatives, possibly through phone or online contact, is not enough; meeting them face to face is crucial in protecting from depression. Cornwall and Waite (2009) reported that 'perceived isolation' is more important than objective social disconnectedness alone in contributing to depression. It is possible that social media, however effective in helping to stay connected, does not reduce the sense of perceived isolation that one may feel when one is an elderly person living geographically apart from children and relatives.

When it comes to emotional coping, mode of contact with children does not seem to play a role; it is only frequency of contact with children that seems to matter, with high frequency of contact associated with better emotional coping. Both frequency and mode of contact with relatives, however, seemed to have no impact on coping. A possible reason could be that the participants may see their grown children as people they can lean on to help them cope with problems

but may not see relatives in the same light; cultural factors may influence the extent to which individuals may share concerns with extended family or may prefer to hide these to protect their image.

With anxiety, connectedness with both children and relatives does not impact scores at all. This is an interesting finding, and one may hypothesize that when it comes to anxiety, it is not frequency or modality of social contact that matters but quality. 'Negative' social contact characterized by conflict may be associated with anxiety in itself. This is a variable that one can explore in future studies.

Conclusion

This study is interesting in what it tells us about the complex nature of relationship between social contact and cognitive and psychological well-being. The findings suggest that it is important for those who work with the elderly to focus on improving their social support networks, keeping in mind that different sources of support and modalities may perform varied protective roles for them. Successful aging, then, may mean learning to strengthen the 'positive' networks, making active efforts to meet rather than stay in touch, and embracing technology as a means to overcome challenges due to geographical distances and mobility restrictions.

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Determinants and Implications of Population Ageing in Mysuru District: A Comparative Micro Level Analysis between Rural and Urban Areas

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ABSTRACT

The present study was an attempt to analyse the causes and consequences of population ageing at micro level both in rural-urban areas, covering Mysuru district as a whole and villages and wards as units of analysis. The present study was entirely based on primary data collected from sample villages and wards of the district. Random sampling method was used for sample selection. For data analysis tables, graphs and simple statistical techniques such as percentage, ratio, Kendall's ranking methods were used. The study reveals that, the socio-economic and demographic developments are the main causes for population ageing and leads to increase the old age dependency ratio.

Key words: Fertility, Mortality, Longevity, Aged Population, Causes, Consequences

The phenomenon of ageing of population is the result of decrease in fertility and mortality along with socio-economic development leading to increase in the standard of living and health status of the people, which in turn has led to increase in longevity. Consequently

the proportion of older population to the total population is increasing. This large number of the elder population, which is economically and biologically non-productive, will create several problems like increase in old age dependency and old age sex ratio and decrease in the number of young population available to care for the aged people. Inadequate young workforce will exert greater pressure on government and society.

Because of these factors, it is essential to study the causes and consequences of population ageing at micro level such as village and ward level, so that the appropriate area specific programmes and solutions may be devised at these levels. Hence the present study concentrated on the analysis of causes and consequences of population ageing at micro level i.e villages in rural areas and wards in urban areas of the district.

Methodology

Study Area

Mysuru (Mysore) district lies in the Southern Maidan (Southern Plateau) and it is in the southernmost part of Karnataka State. Mysuru district forms a distinct land unit, besides being a cultural entity lying between 11E30' N to 12E50' N latitudes and 75E45' E to 77E45' E longitudes.

Mysuru district covers an area of 6269 sq km that is, 3.29 per cent of the state's total geographical area. According to 2011 census the district is having 29,94,744 population (male 15,11,206 and female 14,83,538) and sex ratio is 982.

Selection of Sample Villages and Wards

In 2011 Mysore district has 1,242 villages; out of this 12 villages (1% of sample villages) were selected based on random sampling. Thus, from selected villages 20 per cent of households in each village were selected and every fifth household was enumerated. Out of 3,994 total households, 800 households were covered for the rural survey.

On the other hand, out of 193 wards in eight urban centers of the district, 5 per cent samples (10 wards) and 5 per cent of household were selected and every 20th household was enumerated. Out of 12,057 total households, 601 household were covered for the study (table 1.1).

Thus the sample size for the survey was 1,401 households from 12 villages and 10 wards spread all over the Mysore district.

Table 1
Total Household and Sample Households of Villages

<i>Areas</i>	<i>Total Villages/wards</i>	<i>Selected Samples</i>	<i>Tot HH</i>	<i>Sample HH</i>
Rural	1,242	12 villages	3,994	800
Urban	193	10 wards	12,057	601
Total	1,435	22	16,051	1,401

Source: Computed by the Authors.

The present study was mainly based on primary data collected from villages and wards in Mysuru district (Table 1). Simple statistical techniques and also tables, graphs were used for data analysis.

Findings and Discussion

Spatial Pattern of Old Age Population Distribution

The share of aged population is the reflection of demographic advancement and it is an output of socio – economic development. The higher the development higher will be the share of old age population and vice versa. The proportion of old age population shows the intensity of the process of population ageing. In this context, the present investigation attempted to show the spatial pattern of aged population distribution. Table 1.2 indicates that medium and low proportion of old age population distribution is concentrated in urban areas, whereas a higher proportion is found in the rural parts of the district.

Table 2
Proportion of Aged Population and No. of Taluks:

<i>Share of Old Age Population</i>	<i>Rural</i>	<i>Urban</i>
	<i>No. of Taluks</i>	<i>No. of Taluks</i>
High (< 14.5%)	05 (71)	00 (0)
Medium (12.5% – 14.5%)	02 (29)	04 (57)
Less (> 12.5%)	00 (0)	03 (43)
Total districts	07	07

Source: Compiled by the authors.

Figures in parenthesis indicate % to total no. of Taluks.

The area of high proportion in rural areas stretches over 5 districts covering 71 per cent of the total taluks where the proportion of the aged population exceed 14.5 per cent, but no taluks in the urban areas were found in this category. The high proportion of aged population in these areas is mainly due to lower birth rate and death rate, better education status and economic status, which is discussed further.

The percentage of aged population between 12.5 per cent–14.5 per cent represents the medium proportion. The medium proportion of aged population was found in 4 taluks in rural areas, covering 57 per cent of the total taluks. On the other hand, two taluks in urban areas were found in this category. In three taluks, (43%) in urban areas, the proportion of aged population did not exceed 12.5 per cent and in rural areas it was zero, which means that no taluk was found in this category.

Causes for Population Ageing

The process of population ageing is directly determined by the birth and death rates, which are influenced by the socio-economic and demographic development of the region. The stage of demographic transition also indicates the level of overall development of the region. Moreover, the transition from high to low birth rate is expected to narrow down the age structure at its base and broaden the same at the top. Therefore the extent of change of birth and death rate along with the socio-economic and demographic features shows the level of the intensity of the process of population ageing. This point is further analysed below.

Socio-economic and demographic development is defined as improvement in the quality of the population in a given region. There are different variables which determine the socio-economic and demographic development of a region. Birth and death rates are the fundamental components impacting demographic development. Sex ratio, literacy rate, work participation rate and the annual income shows not only demographic development but also socio-economic development both of which play a significant role in improving the overall development of the region. Therefore, all six variables are very

significant in determining the level of socio-economic and demographic development.

In the present study therefore, the following parameters were selected:

Demographic variables

X1 – Birth rate

X2 – Death rate

Economic variables

X3 – Work participation rate

X4 – Annual income

Social variables

X5 – Literacy rate

X6 – Sex ratio

Spatial Analysis of Socio-Economic and Demographic Development

Demographic development is an integral part of regional well being and it helps to bring about sustainable development. According to survey, the development varies from rural areas to urban areas.

Vital Rates

The high share of aged population is mainly caused by the level of birth and death rate. Earlier, our society had a high birth rate along with low life span; as a result share of old age population was considerably low. At present our society experiencing less birth and death rate and high life expectancy, which leads to a higher share of elderly population to the total population. Therefore, it could be inferred that one of the major causes for increase in aged population is reduced vital rates, i.e. birth and death rates.

Table 3 depicts the birth rate as 19.0 births per thousand population and 6.0 death per thousand population in village (rural) average, whereas 15.8 and 4.0 birth and death rates are noticed in the urban areas of the district, because of good medical facilities.

Development of both birth and death rates are lower in urban areas than in rural parts.

Table 3
Pattern of Vital Statistics of Villages and Wards of Mysuru District

Taluk	Villages (Rural)		Wards (Urban)	
	Birth rate	Death rate	Birth rate	Death rate
Total	19.0	6.0	15.8	4.2

Source: Compiled by the authors.

Economic Status

The composition of working force and income level is the reflection of the economic status in the society and the family; economic well-being is very important for development. A high level of economic status reflects less birth and death rates in the region. Therefore, the rate of work participation and income both are very important for influencing the share of aged population. Table 4 reflects that, about 59 per cent of the population is working population to total population, which is 65 per cent in urban areas and 54 per cent in rural areas. The work participation rate is high in urban areas when compared to rural areas.

An analysis of table 1.4 shows that out of 3,216 interviewees, 1891 are workers (990 from rural areas and 901 persons from urban areas) and the remaining 1,325 are non-workers (834 from rural areas and only 491 persons from urban areas). A further analysis reveals that, out of 752 female respondents, 40 per cent are working females in rural areas, and 57 per cent working females are residing in urban areas. Among the non-working males (N = 485), 28 per cent belong to urban areas and 31 per cent live rural areas.

Table 4
Pattern of Working Status in Villages and Wards of Mysuru District

Taluk	Working			Non-working		
	Total	Male	Female	Total	Male	Female
Total	R 990 (54)	629 (69)	361 (40)	834 (46)	285 (31)	549 (60)
	U 901(65)	510(72)	391(57)	491(35)	200(28)	291(43)
	T 1,891 (59)	1,139 (70)	752 (47)	1,325 (41)	485 (30)	840 (53)

Source: Field Survey.

Another significant point is that, female work participation is more in urban area rather than rural areas.

Table 5
Pattern of Annual Income of Villages and Wards of Mysuru District

<i>Income</i>	<i>Villages (Rural)</i>	<i>Wards (Urban)</i>
	16,714	32,000

Source: Compiled by the authors.

The table 5 shows the average income level in both rural and urban areas of the district. The average annual income is very important to know the level of development of a region. According to the survey, urban areas (32,000) have a high average annual income compared to rural areas (16,714).

Literacy Rate

Literacy rate is an integral part of the level of social development in a region. The level of education reflects the situation prevailing in a society. Good education condition leads to significant improvement in the standard of living, less poverty and higher income and it also influences the birth rate. Education status is very important for controlling birth and death rates. Therefore, there is a positive co-relation between literacy rate and a high share of aged population in a region; on account of this, on the more developed nations have good education status along with old age population.

Table 6
Pattern of Literacy Rate in Villages and Wards of Mysuru District

<i>Taluks</i>	<i>Literacy Rate</i>			<i>Illiteracy Rate</i>		
	<i>Total</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>	<i>Male</i>	<i>Female</i>
Total	R	995 (55)	588 (64)	407 (45)	829 (45)	326 (36)
	U	1,034(59)	570(80)	464(68)	358(26)	140(20)
	T	2,029 (63)	1,158 (71)	871 (55)	1,187 (37)	466 (29)

Source: Field Survey.

The percentage distribution of the work participation rate is given in table 6. It shows that around 63 per cent of the people are literate, and 37 per cent population consists of illiterates. In rural areas,

55 per cent of the people are literate; out of them, 64 per cent of them are males and 45 per cent are females. On the contrary 59 per cent elders (80% male and 68% females) are literate in the urban areas of Mysore district. Illiteracy rate is higher in females, especially in rural areas.

Implication of High Share of Aged Population

Population ageing naturally leads to a corresponding increase in the share of older population to the total population. This large number of the elder population, which is economically and biologically non-productive, will create several problems, such as economic, social, political, demographic, and other challenges. Ageing index median age, dependency ratio and old age sex ratio have increased and potential support ratio has decreased to total population as shown in the table.7. A brief comparative analysis of the spatial pattern in these variables as a consequence of population ageing is made in the following paragraphs.

Table 7
Talukwise Pattern of Implication of Population Ageing

<i>Year</i>	<i>Areas</i>	<i>Ageing index</i>	<i>Median Age</i>	<i>Aged Dependency Ratio</i>	<i>Potential Support Ratio</i>
Total	R	69	37	24	4
	U	61	33	18	6

Source: Computed by the authors.

Ageing Indices

The calculation of ageing indices has been done to understand the ratios of different age groups (young, adult and old age groups). The calculation of such ratios holds significance for the present study also. Hence three indices have been calculated to show the implication of high share of aged population. These are; ageing index, old age dependency ratio, and potential support ratio.

Ageing Index

It shows the proportion between the young population and old population. Thus the ageing index is the ratio of the population aged 60 years or over to that under 15. Changes in the age structure lead to

changes in the share of aged population, and it will determine the ageing index. During the earlier times, the proportion of young population was larger, so it led to lower ageing index, but in recent decades, the young population has been decreasing because of lower birth rate, which, in turn leads to higher ageing index.

Table 7 shows the variation in the proportion of young to old age population in the district. It is 69 persons per 100 children in the rural parts of the district. This indicates the intensity of the process of population ageing. As the district is passing through the later stages of demographic transition, the ageing index is likely to increase further.

Dependency Ratio

The old age dependency ratio refers to the proportion of the number of persons in the age branches of 60 years and above to the total adult (15–59 ages) population. The older dependency ratio of rural district is 24 persons per hundred adult populations. In urban areas the dependency ratio is less with 18 old age people per hundred working people when compared to rural areas. Hence, it clearly shows that there is a negative relationship between the ratio of old age and adult age population. It reveals the fact that increase in the share of older population will lead to decrease in the share of economically productive population.

Potential Support Ratio

The potential support ratio is an alternative way of expressing the numerical relationship between those likely to be economically productive and those likely to be dependents. It is the inverse of the old-age dependency ratio, which means that, the number of persons of working age (15–59) per person to those aged 60 years or above.

Table 7 depicts that, four persons indicating that around four adult people are available to look after one aged person; the pattern is the same in the rural areas. It is six in urban areas, where a larger share of working age population resides. It reveals that the increase in the number of aged persons will exert more pressure on the adult population.

Median Age

Median age is the age that divides the populations into equal parts, such that half of the total population is younger than this age and the other half older. Normally, population with below 20 years of median age is considered as young and more than 30 years is classified as old, while that between 20–29 years of median age is considered intermediate (Population division DESA).

The population of Mysore district in the intermediate stage having median age between 30–40 years. In the rural areas of Mysuru the median age is 37 and it is 33 in urban areas. In future, the median age will increase further because of lower fertility which leads to smaller number of young age group population. Rural areas have higher median age than their urban counterparts.

Old Age Sex Ratio

High old age sex ratio is also another implication of population ageing. Sex ratio is always influenced by the birth and death rates of the two sexes. It is essential to understand what changes have taken place in sex ratio in Mysore. For this purpose some important factors like young old (60–70 years), adult old (70–80 years) and oldest old (80+ years) age sex ratio are taken into consideration for comparative analysis.

Table 8
Age Specific Old Age Sex Ratio of Rural and Urban areas of Mysuru

<i>Taluks</i>	<i>Areas</i>	<i>Total aged sex ratio (60+)</i>	<i>Young old sex ratio (60–69)</i>	<i>Adult old sex ratio (70–79)</i>	<i>Oldest Old Age sex ratio (80+)</i>
Total	R	1,164	1,022	1,226	1,565
	U	1,151	1,045	1,120	2,125

Source: Computed by the authors.

Table 8 describes that, if age increases further, the sex ratio is also higher, which shows the intensity of female population ageing or feminization at older ages in the district, especially in urban areas.

The overall old age sex ratio is 1,164 women elders per thousand male elders in rural areas and young old age sex ratio is 1,022, but it is more in adult old age (1,226). It is still more in the oldest old age

(1,565). Urban areas have very high old age sex ratio when compared to the rural. The total elder sex ratio is 1,151, which is slightly less than the rural sex ratio (1,164), but the young elder sex ratio is 1,045; the adult aged sex ratio is 1,120 and the oldest old aged sex ratio is very high, at 2,125 in the district.

Finally, the district is moving towards advanced stage or further development which leads to increase in the share of old age population in future. The intensity of the process of population ageing is more visible in rural areas compared to urban taluks. But the feminization process is more visible in urban area than rural areas.

Conclusion and Suggestions

Finally, it is also clear from the analysis that increase in the number and proportion of elderly is likely to have its direct impact on the demand for health, financial, and social services from the government and the family both in the rural and the urban areas of the district. Therefore, the government and non-government organizations have to take necessary action for the welfare of the elders.

On the basis of present findings it may be suggested that:

- The government should also implement better strategies to improve the status of elders where elders are relatively more.
- Just as government and educational institutions are providing environmental awareness programmes at school and collage levels, importance should be given to awareness of students about the problems of elders. This would result in the younger generation becoming sensitized to the problems of senior citizens.
- Government and non-government organization should give some job opportunities for elderly people, those who want to work, which leads to less stress in their economic life.

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Physical Health of Elders and Its Implication on their Life: A Study in Rural Tuljapur Block of Osmanabad District, Maharashtra

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ABSTRACT

The present study was an attempt to understand the physical health status among elderly people and its impact on psycho-social, occupational, and spiritual wellbeing. 149 randomly selected elderly (73 male and 76 female), age varying from 60 years and above belonging to rural Tuljapur of Osmanabad district of Maharashtra state were the respondents of this study. Data was collected with the help of interview schedule and participant observation. During the course of the study, it was found that health problems coupled with poor socioeconomic condition and lack of preparation for old age adversely affects the elderly people of this sample. The problem of destitution, deprivation, isolation and helplessness increases with the increased degree of disability, patriarchy structure, and impaired economic condition of the elderly.

Key words: Physical health, Isolation, Hopelessness, Gender

Given the ubiquity of population ageing and increasing longevity, common ways in which good health in old age can be promoted is now of paramount concern to health professionals, researchers and policy makers worldwide (WHO, 2015). Social

support, financial security, health care facility, strengthened community care system, meaningful engagement of leisure time can make the life of people smoother during their sunset years of life.

As regards the rural and urban areas, 71 per cent of elderly population resides in rural areas while 29 per cent are in urban areas. More than two-thirds of the elderly population live in village and half of them are from poor socio-economic background. In rural areas lack of proper health care system, economic backwardness, lack of preparation for old age, lack of adequate social security schemes, limited financial resources, etc. increase the problems of old age people. Studies conducted by the Centre for Gerontology studies in Kerela shows that unacceptability of the aged by the young members of the family arises out of their economic difficulties (inter alia the old making demands on limited resources and limited time available to their kins for care giving) and if these are removed, the old age people would be more acceptable (Nayar, 2000). Recent work of Chokkanathan Srinivasan and Alex E.Y. Lee (2005) shows gender, social support and subjective rating of physical health as significant factors associated with abuse of elderly people.

In India the concept of preparation for old age is not widespread as people assume that it is the responsibilities of the children to look after them during old age (Rajan., *et al.*, 1999). But the dismal fact is that most of the elders are financially, physically, and psychologically abused by their family members. To make the elders to live a dignified life preparation has to be mainly three fold: one is financial security; second is health facility; third is education; and fourth is creation of meaningful engagement.

Objectives of the present study were three fold: a) to study the physical health status of the elderly in rural Tuljapur b) to examine how the physical health condition affects mental, social, occupational, and spiritual life of elderly and c) to suggest ways to improve the quality of life of elderly people in rural Tuljapur.

Method

Sample

The present study was conducted in four villages of Tuljapur block, Osmanabad district of Maharashtra. The villages were selected

as per the prior experience of the researcher in that village and because the researcher spent sufficient amount of time in those villages prior to data collection. The researcher had a good rapport with the villagers before, which was very much essential for conducting an in-depth study. A sample of 149 elderly people with 60 years and above was studied, of which, 76 were women with the mean age of 66.91 and 73 were men with the mean age of 70.18. The respondents were selected on the basis of their interest and desire for voluntary cooperation for the study keeping in view the pre-determined number. While selecting the interested elderly people it was kept in mind that there should be proper representation of different castes and their socio economic background.

Tools of Study

A well designed interview schedule consisting of questions related to general health, activities of daily living, leisure time activities, awareness of support system, relationship with family members marital status, financial sources, literacy status, and occupation was canvassed for getting basic information regarding the elderly people. Focused group discussion and participant observation was also used to understand the impact of physical health issues on psychosocial, occupational and spiritual life.

Findings and Discussion

Table 1
Demographic Details

<i>S. Geographical No. Location</i>	<i>Rural</i>			<i>Urban</i>			<i>Total</i>		
	<i>Male</i>	<i>Female</i>	<i>Total</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>
1. India	7.80	8.40	8.10	7.60	8.20	7.90	7.70	8.40	8.00
2. Maharashtra	9.70	10.90	10.30	7.60	8.20	7.90	8.80	9.70	9.30

Table No.1 shows the rural, urban and gender wise distribution of elderly in India and Maharashtra. According to the census of India 2011 report, 1, 11, 06,935 persons aged 60 years and over in Maharashtra, of which 52, 53,709 (47.30%) were males whereas 58, 53,226 (52.70%) were females (Register General, 2011).

Marital Status

Table 2
Marital Status Details

<i>S. No.</i>	<i>Marital Status</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>
1.	Married	73 (48.99)	76 (51.01)	149 (100.00)
2.	Widow/Widower	6 (21.43)	22 (78.57)	28 (100.00)

Note: Figures in the Parentheses indicate Percentages.

It was found (Table No: 2) that all respondents are married and there is no case of divorce. 81.21 per cent are living with their spouses and 18.79 per cent of them are widow/widower. It was found that widow women outnumber the widower men. The reasons for this are twofold. Firstly, the age difference between the men and their wives (men being older), there is good number of men who age above 60 but their wives are less than 60. In some cases the age difference between a couple is as high as 20 years, because of which women survive their men as widows. Secondly, the life expectancy of women is longer and mortality rate is lower in comparison to men.

Family Support

Table 3
Family Support Details

<i>S. No.</i>	<i>Family</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>
1.	With Family Support	62 (55.86)	49 (44.14)	111 (74.50)
2.	Without Family Support	11 (28.95)	27 (71.05)	38 (25.50)
	Total	73 (49.00)	76 (51.00)	149 (100.00)

Note: Figures in the Parentheses indicate Percentages

Family support (Table 3) refers to the physical and emotional comfort given to elderly individuals by family. It brings a sense among the elderly person that they are loved, cared and valuable for their family members. Joint family, kinship and value system in the past ensured emotional help, physical security and social support to the aged (Ramamurti, 2002). But the emergence of market economy has disintegrated the traditional joint family system and leaves the older

people vulnerable and isolated. In rural India overall family support is not very encouraging; maltreatment by family members more specifically by son and daughter-in-law has become a common phenomenon. The present study shows that 74.50 per cent respondents are getting family support whereas 25.50 per cent are living without family support. Almost 24 per cent of the elderly are living alone either because they have no child or because their children have abandoned them. The reason for abandonment is two folded. First, their children have migrated in search of employment or education to other places. Second, their children don't want to bear the burden of the old parents. It was also observed that the number of abandoned women outnumber the number of abandoned men. The reason can be patriarchal structure of the society in which women lack the power and property rights. They are also not aware of their rights due to lack of adequate education and limited exposure. During their life course most of the women are engaged in household activities which is not valued in monetary terms and they are dependent on men for social and financial needs. Lack of productive assets; little or no savings and investment; limited control on household resources; and lack of adequate Govt. support make them more vulnerable. During their decline age due to reduced physical efficiency when they are not able to perform the household work they were doing previously, they are usually maltreated. In addition to this if they become physically dependent they are perceived as a burden which leads to abandonment. Men are mostly financially independent and also have property rights because of which they are valued and taken care of even at old age. In case of men their spouse takes care of them, but the scene changes when it comes to women, as they are usually perceived as caregivers. It was also found that problems faced by widow ladies are graver than problems faced by widower men. One thing was noticed that the presence of grandchildren makes a difference. Interacting and taking care of the grand children makes the elderly people feel more worthy. The emotional bonding with the grandchildren makes them more enthusiastic towards life and gives them a reason to live for long.

Literacy Rate

Table 4
Literacy Rate Details

S. No.	Education Status	Male	Female	Total
1.	Illiterate	51 (41.46)	72 (58.53)	123 (82.55)
2.	Literate	22 (84.62)	4 (15.38)	26 (17.45)
	Total	73 (49.00)	76 (51.00)	149 (100.00)

Note: Figures in the Parentheses indicate Percentages.

Education is an essential tool to enablement and empowerment, but it was found that the elderly person at present residing in rural areas have low attainment, which makes them dependent on others for paper work to avail various Governments support schemes and be aware of their rights. In the study villages, with regard to literacy level (Table No: 4) of elders 17.45 per cent respondents are literates out of which only 15.38 per cent are women. Even for men the literacy rate is not very high, because of which there is very low level of awareness among elders regarding their rights and entitlements for various welfare schemes. According to the collected data 12 per cent of the total respondents were literate out of whom 15.38 per cent are female and rest 84.62 per cent are men. Among literate elders also almost half of them are below 5th standard or night school. 19 per cent and 10 per cent elders had completed secondary and graduation respectively. Out of which only one female is graduate and one is 7th pass and rest are primary or less than primary. No female was found to be educated in night school.

Pension Scheme Beneficiaries

Table 5
Pension Scheme Beneficiaries Details

S. No.	Pension Scheme	Male	Female	Total
1.	Pension Scheme of Govt. of Maharashtra	40 (49.38)	41 (50.62)	81 (100.00)
2.	Other Schemes	–	–	–
	Total	40 (49.38)	41 (50.62)	81 (100.00)

Note: Figures in the Parentheses indicate Percentages.

In India majority of elderly people living in rural areas are engaged in unorganized sector and have low financial base. In such a situation State has enormous responsibility to ensure a dignified life to the elderly people. Government has spelt out many programmes and schemes for the benefit of elderly people but it has not covered all elderly people. It was found (Table 5) that just 54.36 per cent elders out of which 49.38 per cent men and 50.62 per cent women are receiving pension under social security schemes of Government. The amount paid to them is just Rs. 600 per month and that too they do not receive on monthly basis. It is deposited at the gap of 3 to 4 months most of the time. Because of this they face enormous financial problem. Almost all of them depend on pension especially elder people who live alone and aren't able to do any other financial activity owing to their physical weakness. Those elders who practice agriculture and labour work also have seasonal employment hence almost for half of the year are dependent on pension. It was also found that elders who are physically dependent on their family members or any other person for collecting their pension are most of the time cheated by them. 45.64 per cent elders are not getting pension benefits. The reason for this can be four fold. First, they belong to above poverty line, which is very small in number. Second, they crossed the age 60 years just recently after the data was collected. Third, they are still unaware of the various schemes. Fourth, they are unable to produce the required document.

Physical Health Status

Table No.6 shows that 59.73 per cent respondents are suffering from body pain, 48.99 per cent respondents are suffering from weakness, 14.76 per cent are suffering from diabetes, 14.76 per cent are suffering from blood pressure, 12.25 per cent are suffering from Walking disability, 9.40 per cent are suffering from heart problem, 7.38 per cent suffering from Visual disability/cataract, whereas 24.16 per cent respondents have reported that they do not have any diseases. Elderly not having any disease mostly belong to the young old (60–70) age group.

Table 6
Physical Health Status Details

<i>S. No.</i>	<i>Diseases/Disability</i>	<i>Male*</i>	<i>Female*</i>	<i>Total¥</i>
1.	Weakness	34 (46.57)	39 (55.43)	73 (48.99)
2.	Body Pain	41 (46.06)	48 (53.94)	89 (59.73)
3.	Walking Disability	8 (42.10)	11 (57.90)	19 (12.25)
4.	Visual Disability/Cataract	3 (33.33)	6 (66.67)	9 (6.04)
5.	Diabetes	13 (59.09)	9 (40.91)	22 (14.76)
6.	Blood Pressure	8 (38.10)	13 (61.90)	21 (14.09)
7.	Heart Patient	6 (42.85)	8 (57.15)	14 (9.40)
8.	Cancer	1 (33.33)	2 (66.67)	3 (2.01)
9.	Operated/Bed ridden	4 (36.36)	7 (63.64)	11 (7.38)
10.	No Disease	17 (47.22)	19 (52.78)	36 (24.16)

Note: Figures in the Parentheses indicate Percentages

* Percentage to total number in category, ¥ Percentage to total sample 149

In the present study the health status of the elderly people is categorized into three categories depending on the degree of physical dependency good, poor, very poor. The good category includes those elderly people who have no disease or disorder and who are comfortably leading their life. The poor category includes elderly people suffering from conditions like general physical weakness, body pain, diabetes, blood pressure, heart problems, who are able to perform their day to day activities but with some limitations and are partially dependent on others. Very poor category includes conditions like walking disability, visual disability, and cancer that needs more assistance or operated patients and bed ridden ones that need complete assistance from others for all daily life activities.

Physical health and psychosocial life

Physical health and psychological wellbeing go hand in hand. Generally, deterioration in physical health; increased weakness of muscles and bones; reduction in physical efficiency; increase the dependency of the older people on others. This dependency creates anxiety and a feeling of helplessness. Elderly people with reduced physical mobility due to sensory or motor impairment like visual or motor disability feel themselves as a burden. It was noticed that elderly who have physical impairment since birth cope this stress better than those elderly who acquire these impairment later in their life. Elderly

people who acquire the sensory impairment as a result of the old age feel more distressed and helpless because their usual day to day routine activity gets hampered and they have to depend on others. As an elderly male from study village who was visually impaired in his late 70's says,

'I feel disabled as I have to depend on others for every small work, and this makes me to feel stressed and deprived'.

Increased health problems proportionately increased the expenditure on health but are inversely related to earning opportunities. Increased expenditure on health on one hand and reduced financial sources on the other makes the elderly feel more vulnerable. In old age usually people get more free time, but if there is no proper planning of how to utilize that time in a meaningful way people feel stressed and worthless. But one interesting thing was noticed in this study that this boredom is more among male than females because they don't have any retirement age as they continue do the household work even if they are old. It was also noticed that if the grandchildren are staying with them then this feeling is alleviated.

It was noticed that with the increased disability the abandonment by the family members also increases which is forcing the elder people to earn their own livelihood. Those people who are earning their own bread and have no family support at present feel more stressed, more so when they think of their future. Most of them fear what will happen in future and are very pessimistic as at present they are not getting any support from their family and blood relatives. As one woman says;

'I didn't have my leg since my childhood I struggled throughout my life, I could do that because at that time I was young but now it is difficult for me and I get even more scared when I think of my future'. In such cases they expect Government to come forward and help them. As said by one lady who is physically challenged since childhood and has no one at present to look after her,

'I cannot go to any government office as I cannot walk, if government runs many schemes then why can't government come to disabled and elder like me?'

Those people who are supported by family also feel themselves as a burden on their family because of their reduced mobility and increased medical expenses. Those elder people who are not financially stable and have no family support feel more distressed as they are not able to meet the treatment costs of any impairment and other health problems. Many researchers have reported presence of spouse to be a very important and strong predictor of life satisfaction. Individuals at greatest risk of emotional isolation are those without a spouse (Adams, R. and Blieszner, R., 1989). The psychological condition of elderly becomes even worse if any one of the spouse is dead. In such condition females face more difficulty than men as the rate of isolation and destitution is higher among them.

Elderly people who are suffering from chronic diseases like blood pressure, heart problems, and diabetes undergo drastic psychological changes. Blood pressure and diabetes requires continuous medical expenses and it is very difficult for old age people to manage those expenses. If the family is meeting the expenses the elderly people feel guilt for being burden on their children and those people who have no one to support financially feel stressed as where from to meet the expenses. The people who suffer from cancer faced even more problems. The financial burden, lack of hope to live, lower interest in life and family isolation multiplies their stress, they feel helpless and hopeless. Isolation, depression and a feeling of undignified existence are very common among this group of people.

Decline in cognitive function is considered as a normal consequence of ageing (Craik FIM and Dirk, E., 1992). People with age related cognitive decline experience deterioration in memory, learning, attention, concentration, thinking, use of language including neurological disorder like Alzheimer's disease. In the study area there were two people who had Alzheimer's disease along with other health problems. Their children kept them outside the home and other than giving food they don't take care of any other requirements of them. In rural areas in most of the cases this disease goes undiagnosed and persons suffering from this disease are treated in undignified way. The bed ridden elders are mostly abandoned by their children and have lost interest in their life. Other people in the village look at them with a sympathetic eye. This makes them to feel much undignified.

The overall family support is not very much encouraging and old age people are suffering from loneliness, depression, and adjustment problems. Increase number of nuclear family, migration of children to other places, changing value system, poor financial condition etc. in rural areas are making the elderly care more challenging. In the absence of their own children the elderly people are becoming more dependent on others. Sometime the undignified words of others hurt them a lot. In the eyes of other people the image of elderly people also changes. They are perceived as unproductive and a burden. In most cases respect is replaced by sympathy and feeling of pity. Due to decline in cognitive and physical domain they are not much involved in decision making process and their positions also gets demoted in family and society. However, when the question of religious activities comes the elderly people are still consulted because of the experience they hold.

The rate of Isolation and abandonment of the old people increases with increased health problems and physical limitations. The social life of elder people enjoying good health condition does not get much affected, but people belonging to other health categories face difficulties. The bed ridden elders become housebound which further increases their isolation from the community. People in the community show sympathy for them. It was seen that neighbours in village took care of their basic needs like food when there was no family member to look after such old person. This acts as a protective factor in village community for elderly, which need be sustained.

Migration of the family members for earning their livelihood is making the old age people lead a lonely life especially for the people who belong to poor socio[economic background. It was noticed that freedom to choose whether to stay alone or not is directly related to positive mental health. Those who internalize the responsibility and control of their own lives were found to be less lonely than those who felt they had little control over the latter part of their lives (Moore and Schultz, 1987). When a person selects herself/himself to stay alone she/he is more confident and happy. One elderly lady who is staying alone despite having four sons and one daughter says;

'We belong to a poor background, my four sons' work in different cities as labourers', all my daughter-in-laws averts away their

responsibility and impose it on each other. They fight because of me. I don't want all this. I am happy alone. I can earn for myself and die like this'. But when the person is forced to live alone he/she feels rejected and sad. As said by one lady who had four married sons living in another village deserting the old mother in the village, 'my sons left me alone, I feel very sad that at this age I have no one to support me and I am earning my livelihood by selling tamarind in front of village school. I feel ashamed and helpless'.

Physical health and Occupational Life

With old age it is obvious that there is a general decline in the physical capacity, when it is coupled with any other disease or disorders it leads to further physical deterioration. The change in the capability and physical efficiency directly affects their occupational life. Mostly the occupational engagements of the elderly were found to be in agriculture; labour; other caste based financial activities like dairy, poultry, pottery, shoe making, animal grazing, carpentry, broom making, etc. and household activities. It was found (Table No: 7) that 59 per cent elderly are still engaged in various occupations, out of which 45 per cent are engaged in heavy work like agriculture and labour despite being physically weak and 14 per cent of them are engaged in other occupations like dairy, poultry, pottery, shoe making, animal grazing, carpentry, broom making, sitting in children's shop, light agriculture activities or selling fruits and vegetables, etc. Elderly engaged in heavy work usually are forced to work because either they are financially very poor or they are alone. 41 per cent of the elderly are not engaged in any financially gainful engagement mostly because they are bed ridden or physically very weak that they can't do anything.

Table 7
Occupational Involvements Details

S. No.	Occupation	Before 60 Years	After 60 Years
1.	Agriculture	38 (25.50)	28 (18.79)
2.	Labour	63 (42.28)	39 (26.17)
3.	Others	25 (16.78)	21 (14.10)
4.	No Occupation (With Monetary Return)	23 (15.44)	61 (40.94)
Total		149 (100.00)	149 (100.00)

Note: Figures in the Parentheses indicate Percentages.

To get the actual scenario the comparison of the occupational engagement before and after aging was considered. It was found that before aging 25.50 per cent of the respondents were engaged in agriculture which reduced to 18.79 per cent after aging. Before aging 42.28 per cent of people were engaged in labour which reduced to 26.17 per cent after aging. Involvement in other activities does not change much it was 16.78 per cent before and after also 14.10 per cent. Much change has not happened in the other category which indicates that those people engaged in their traditional occupation run it even at old age also. The percentage of elderly who are engaged in no financially gaining activity increased from 15.44 to 40.94 per cent. Before aging the person belonging to non-financial engagement group were mostly women (12.75%) and 3.35 per cent were men who were dependent on their spouse and family because either they are physically challenged or addicted. The number of non-financial engagement group shows a considerable increase in number because elders suffering from chronic health problems, sensory and motor impairments, bed ridden are not able to perform certain activities.

The major reduction happened in labour sector engagement because it requires more physical strength and during old age due to the decline physical ability it becomes difficult to do such work. It was also observed that those who are still engaged in heavy work are either alone or belong to poor financial background. It was also found that some respondents shifted from heavy activities to lighter activities like shop, broom making, animal grazing, selling goods on street, poultry, etc. At the same time respondents belonging to others occupations shifted to agriculture, financial activity, etc. As one of them who has been working as driver shifted his profession and said;

'I have lost my clarity of vision, I feel physically weak; so I am not able to drive, I can't do anything else other than driving; as my son is good and supports me and my wife, now I am spending time with my friends who are of my age'. The elders with poor health condition generally prefer to shift from work to no work, while the elders who belong to physically challenged category shift when the disability is visual, while the other physical disability which occurred before old age doesn't have noticeable impact of old age on their occupation. The elders from fair health category also have shift from the work to no work or heavy

work to light work but this shift occurs generally among male respondents. It was noticed that women are equally involved in household work even during old age as like before.

Physical Health and Spiritual Life

Spirituality refers to the way individuals seek and express meaning and purpose and the way they experience their connectedness to the moment, to self, to others, to nature, and to the significant or sacred (Puchalski, 2004). Spiritual practices seem to help an individual cope with various aging-related illness and losses and help them build up in themselves an important resource for resilience (Katsuno, 2003; Blazer, 2006; Doolittle and Farrell, 2006; Kohls, *et al.*, 2009). It has been found that spirituality is more important to elders than it is to younger adults (Emery and Pargament, 2004). Elders often resort to spirituality to manage the stress accompanying bereavement, loneliness, economic decline, and ill health in old age (Tornstam, 1997; Atchley, 2006). It was found in the present study that many of the respondents have incorporated spiritual and religious activities in their daily routine. Increased age; growing physical suffering and availability of time makes the elder people spend more time on spiritual activities, which makes them feel happy and satisfied. They spend time with their grandchildren telling the religious stories.

People who have good health condition and are financially secured and have family support take the leisure time as an opportunity to spend more time in religious activities, and also to travel various religious places with their peers. Religious institutions such as temples, churches, and mosques are often a focal point for social interaction, social exchange and creation of support networks. It was noticed that in village elderly people who are financially and physically sound form groups and travel to various religious places. This helps them to remain calm, sound, and composed. Elderly people who have sound health but do not have financial security and family support do not seek change in their religious practices.

The respondents with poor health condition have different reasons for their involvement in spiritual activities. Some pray for the easy and sooner death for getting rid of their physical sufferings. People who have family and being taken care by them are satisfied and

choose devotional path to get a long life. They pray to God for living a happy life with their grand children and their grand children's children. Elderly people having disability since the childhood are not much inclined to spiritual life but those elders who loose eyesight at the old age have been observed to become more spiritual during ageing.

Conclusion and Suggestions

Caring for the elderly is a part of the religious and culturally acceptable response found in the study villages. This provides insight into an understanding that the villagers can take care of their village issues relating to ageing and destitute provided the Gram Panchayat and district administrator support them. It was also found that in old days the bed ridden and deserted elderly persons were cared by the people of village (society). Such practices (Community care system for the elderly people) could be revived now at village level.

It was found that majority of elderly people were suffering from general physical weakness and body pain. It will be very helpful if physiotherapy facility could be arranged at village level. For the same training of physiotherapy under the skill development program may be given to the young adolescent girls and boys in the villages so that they will be able to help the elderly people in physical pain and distress.

It was found in one of the study villages that elderly women used to assemble together in one place in afternoon and discussed various issues related to their day to day life. Such peer support groups should be fostered because this helps them to get the moral support from their peer group who are sailing in the same boat. Such groups can be used as a platform for giving psycho education; creating awareness regarding various Govt. Programmes; making them aware of their rights; and explaining them the procedure to avail benefits of various schemes of the Government

During old age a major problem is the feeling of worthlessness, isolation and destitution. To address such problems at village level certain activities based engagement programmes should be organised.

Much emphasis is given on health care delivery system on mother and child. It was observed that older people were largely excluded from these schemes. To meet the nutritional and food needs of the

elderly people (specially for poor and neglected and elderly who are living alone) may be linked to ICDS program and MID-DAY meal program.

Many elderly people in study village were found to belong to poor socio-economic background, and they need support from Government on urgent basis. It was found that the benefit through various schemes given by the Government is not reaching to the elderly regularly. Some measures should be taken so that they may get the benefits of Governments schemes for elderly on regular basis.

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Assessment of Physical and Mental Health of Elderly Living Alone in Chandigarh: A Public Health Perspective

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ABSTRACT

Present study was undertaken to assess the physical and mental health status of elderly people staying alone in Chandigarh and; also to assess the psycho-social problems faced by the elderly. Present study endeavours to understand the social, mental and physical health dimensions of the elderly, and their living as well as emotional conditions and their perspective towards the society. A cross-sectional and observational study was done with 110 elderly (M=72; F=38) individuals living in selected localities of Chandigarh (India) and qualitative data was collected by convenient and snow-ball sampling method. An interview was conducted using a predesigned questionnaire. Data was analysed using SPSS software and Chi-square test was applied to test the significance in the observations. Around 60 per cent of the elderly population under study were suffering from some chronic illnesses like diabetes, hypertension, cardio-vascular diseases, arthritis, etc. and almost equal percentage of the elderly admitted to be distressed due to loneliness and other family issues. Socio-demographic factors like socio-economic status, physical health, chronic disease, family relationships were significantly having effect on the mental health

status of elderly. The short vision and hearing impairment were the most common physical impairment which they suffered. It was concluded from the findings of this study that the elderly living alone or with their spouses only; do suffer physically as well as mentally.

Keywords: Elderly people, Chandigarh, Physical and Mental Health, Socio-demographic status

Ageing is a serial process which begins with life and continues throughout the life cycle. In the life span of an individual, it depicts the concluding period of life, when one looks back to what he has achieved in life and begins to finish off his course of life. Elderly population is the most vulnerable population group who are at constant risk of malnutrition or under-nutrition and morbidity or mortality and thus, require immediate attention from public health perspective. The older people encounter many problems such as disease contraction, depletion in general health, poverty, depression, familial neglect and feeling of worthlessness. One has to study these problems as the part of the process of ageing to understand ageing. However, these problems are often caused by the society itself. These problems should be thoroughly studied not only to neutralize some of the negative aspects of ageing but also for the betterment of society since some of the problems are socially influenced/generated.

Ageing population is a global phenomenon due to improved medical, nutritional and environmental conditions. According to Census of India 2011, India is in a phase of demographic transition (Census, 2011). As per the demographic profile 2017, the population of the elderly people in India is about 78 million. There has been a sharp increase in the number of elderly persons between 2001 and 2011 and it has been projected that by the year 2050, the number of elderly people would rise to about 324 million. India has, thus, acquired the label of 'an ageing nation' with around 7.5 per cent of its population being more than 60 years old (CIA World Fact Book, 2010).

The health programmes and policies of Indian government have been focusing on issues like population stabilization, maternal and child health, and disease control over the past decades. However, current statistics for the elderly in India gives a prelude to a new set of medical, social, and economic problems that could arise if a timely

initiative in this direction is not taken by the program managers and policy makers. The elderly people in India are facing medical and socio-economic problems which need to be highlighted and strategies to be explored for bringing about an improvement in their quality of life. The rapid urbanization and societal modernization has brought in its wake a breakdown in family values and the framework of family support giving rise to economic insecurity, social isolation and elderly abuse which further leads to a host of psychological illnesses (Jamuna and Reddy, 1997). The most common health problems encountered among the elderly include problems of eye-sight, hearing, joint pains, nervous disorders, weakness, complaints related to heart, asthma, urinary problems affecting men and women differently (Shukla, *et al.*, 2015). The change in family structure along with economic insecurity results in elderly losing their relevance and significance with increasing feeling of loneliness.

Methodology

Present study was carried out from January 2018 to April 2018 covering the northern sectors of Chandigarh to assess the physical and mental health of the elderly. The study included 110 elderly people aged more than 60 years and living alone. The exclusion criteria were elderly person living along with their family or relatives and unwilling participants. Convenient random and snow-ball sampling techniques were used to collect data for present study analyses. Data collection was done via in-person survey method using an interview schedule. Informed written consent was obtained from the participants prior to questioning. A predesigned questionnaire pro forma was administered to each elderly to inquiring the socio-demographic profile (such as age, sex, religion, marital status, family size and type, education, occupation), financial conditions (source of income and financial dependency), medical illnesses and their status (taken based on the respondents' self-reports of illnesses that were diagnosed, under follow-up and treatment by doctors at medical and health facilities, physical disabilities, sleep disorder), emotional attitude and beliefs (their feeling of loneliness; duration and reasons for living alone; general attitude of elderly towards life such as desire for longevity, satisfaction in life, faith in God, views about the young generation, ambitions;) and social interactions (their social network with friends

and family; recreational activities they are involved in). Data was entered in Microsoft Excel and analysed using SPSS. Chi-square test was used as statistical test. $P < 0.05$ was considered to be statistically significant.

Result

Socio-demographic profile of the study population was given in Table 1. Majority of the respondents under the study were between the age group of 60–70 years (53.6%) followed by those between 71–80 years (30.9%). 65.5 per cent were males and 34.5 per cent were females. Nearly all of the respondents were literate and many of them were retired (80%). Most (83.6%) of them were having pension as their source of income. Maximum fraction of the respondents (91.8%) was living in nuclear families. Among the total population, 74.5 per cent were Hindus while 25.5 per cent followed Sikhism.

Table 1
Socio-demographic Profile of the Study Population (N=110)

	<i>Parameter</i>	<i>N</i>	<i>%</i>
Age distribution (years)	60–70	59	53.63
	71–80	34	30.90
	> 80	17	15.45
Religion	Hindu	82	74.54
	Sikh	28	25.45
Gender	Male	72	65.45
	Female	38	34.54
Educational qualification	Illiterate	2	1.81
	Primary	7	6.36
	Middle	4	3.63
	Matriculation	13	11.81
	Higher secondary	20	18.18
	Graduate	48	43.63
	Post graduate	15	13.63
	Others	1	0.90
Marital status	Married	80	72.72
	Divorced	1	0.90
	Widow/widower	29	26.36

Cont'd...

...Cont'd

Type of family	Nuclear	101	91.81
	Joint	9	8.18
Place of stay	City	96	87.27
	Town	14	12.72
Occupation	Housewife/home stay	22	20
	Retired	88	80
Age at retirement	58	58	52.72
	60	30	27.27
Retired as	Ex. Govt officials	14	12.72
	Govt. Employee	64	58.18
	Private/business	9	8.18
	Army personnel	3	2.72
	Home stay	20	18.18
Source of income	Pension	92	83.63
	Business	7	6.36
	Dependant on children	11	10

As per the educational qualifications of the respondents, 43.6 per cent of the respondents were graduates, followed by higher secondary education (18.2%), post graduates (13.6%), matriculation education (11.8%), primary education (6.4%) and 3.6 per cent were having middle school education. Only 1.8 per cent of the population were illiterate and 0.9 per cent had doctorate degree.

Regarding the marital status of the population under study, 72.7 per cent were married and living with their spouses only, 26.4 per cent of the elderly population were widow/widower and only 0.9 per cent was divorced.

Majority were having children (95.5%), with 87.3 per cent subjects having their children married. 30 of the subjects stated that they have been living alone for last 5–10 years, followed by those who were living alone for <5 years (28.2%) and for 10–20 years (24.5%). The main reason for the elderly living alone was because of their children working at distant places (32.7%), daughters were married (21.8%) or children settled overseas (13.6%). Other reasons were that their children were studying outside or they wanted to live separately or it was their own choice to live alone or they did not have any kids.

Distribution depicting the duration of the elderly living alone and the reasons for staying alone were depicted in Table 2a and 2 b.

Table 2 (a) and (b)
Distribution Depicting the Duration of the Elderly Living alone and the Reasons for Staying Alone

<i>Duration of living alone (in years)</i>	<i>Population (in %)</i>
0 to 5	28.2
5 to 10	30.0
10 to 20	24.5
20 to 30	12.7
More than 30	4.5

Table 2 (b)

<i>Reasons</i>	<i>Population (in %)</i>
Children working outside	32.7
Children living abroad	13.6
Children living separately	9.1
Daughters married	21.8
Children study outside	13.6
Family disputes	1.8
Own choice	4.5
No kids	2.7

84.5 per cent of elderly responded that they miss their family every now and then and 61.8 per cent of the respondents admitted that they felt lonely. Majority of the respondents said that they don't feel neglected (84.5%) (Figure 1). Around 74.5 per cent of the respondents stated that their children or other family resided in the same city. Most of the respondents were having good relation with their spouses, children and grand children. More than 76 per cent of the elderly respondents said that they did their work on their own followed by those who needed help sometimes (22.7%) and 52.7 per cent of the elderly were having maids for their house help.

Figure 1
Distribution of elderly people suffering from different physical disabilities

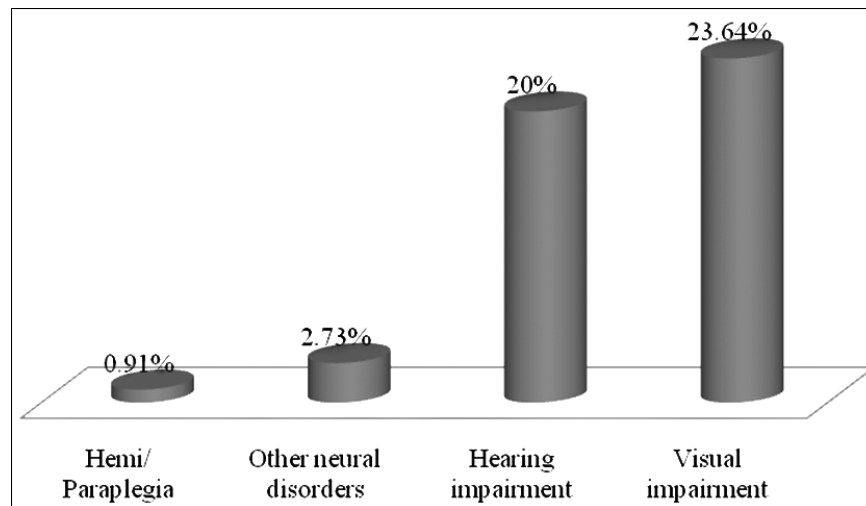
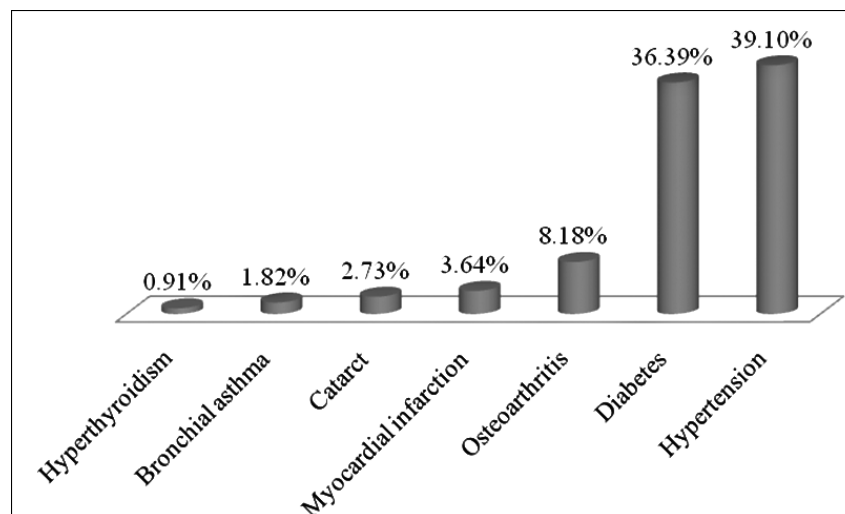


Figure 2
Distribution of elderly people suffering from various chronic diseases



In the health aspect of the elderly, 71.8 per cent said that they stay healthy mostly. Around 60 per cent of the elderly people were found suffering from some chronic illnesses. Approximately 39 per cent elderly were suffering from hypertension while 36.39 per cent suffered

from diabetes mellitus and 8.18 per cent were suffering from osteoarthritis which constituted the above mentioned chronic illnesses. Some subjects were also found to suffer from myocardial infarction, cataract, bronchial asthma and hyperthyroidism (Figure 2).

Visual and hearing impairment was most commonly found amongst the elderly population under study. 34.5 per cent of the elderly admitted that they were facing sleep disturbances. 81.8 per cent of the respondents were found eating properly (Figure 3). More than 75 per cent of the respondents claimed that they were financially independent (76.36%) followed by around 32 per cent who were dependent upon their spouses financially while round 25 per cent were dependent upon their children/relatives for their financial needs. While around 85 per cent of them stated that they cope their financial crisis with their own savings, followed by those who take help from their children or relatives and some who take other measures (6.4%). Majority (93.6%) of the elderly population was having faith in God with more than 92 per cent who always had faith in God and more than 75 per cent who offer prayers to God daily. 61.8 per cent of the respondents said that they regularly visit holy places. Most of the elderly subjects were involved in socialising with their friends, family and relatives often.

Majority of the elderly had the opinion that the behaviour of the young generation towards them was good, they are caring, have respect for the elderly and are concerned for others and older people. Most of them were having desire to live long and healthy (70%) and around 61 per cent were happy to stay alone. Majority of the elderly were satisfied with their lives and had no ambitions to fulfil. A significant correlation was found between the age of the elderly population under study and reasons behind living alone and also between coping with financial crisis with the gender and occupation of the elderly. A significant correlation was also found between the age of the elderly and perception of their health condition. Table 3 shows a significant correlation between the feeling of loneliness and the gender and occupation.

Table 3
Association between age, gender and occupation of the elderly with their feeling of loneliness

<i>Parameter</i>		<i>Lonely feeling</i>				<i>Chi-square</i>	<i>p-value</i>
		<i>No</i>		<i>Yes</i>			
Age	< =70	27	45.8%	32	54.2%	3.098	0.078
	> 70	15	29.4%	36	70.6%		
Sex	Male	33	45.8%	39	54.2%	5.170	0.023*
	Female	9	23.7%	29	76.3%		
Occupation	Housewife/Home stay	2	9.1%	20	90.9%	9.860	0.002**
	Retired	40	45.5%	48	54.5%		
	Total	42	38.2%	68	61.8%		

Discussion

A similar study on health problems among the elderly was conducted by Banerjee, *et al.*, (2013), which showed similarity in results with present study where it was found that visual impairment was the most common handicap, though hearing impairment was also a common suffering. Prevalence of hypertension was 30.7 per cent ; 12 per cent suffered from diabetes; 7.6 per cent had a history of ischemic heart disease. Almost half of the population had history of depression whereas some elderly were suffering from cataract (Thakur, *et al.*, 2015). Another study regarding health problems and loneliness of the elderly in Chandigarh in the year 2007 showed that the main health-related problems among the aged were those of the circulatory system (51.2%), with about two-fifths (41.6%) suffering from hypertension, followed by those of the musculoskeletal system and connective tissues disorders (45.7%); cataract was seen in 18.6 per cent of the population (Bhatia, *et al.*, 2007).

In the study conducted by the Agewell foundation, it was found that more than half of the respondents (55.71% respondents including 69.42% older men and 42.31% older women) claimed that they were financially independent. The percentage of informants dependent on their children/close relatives for their financial needs was 28.83 per cent (20.56% older men and 36.9% older women) whereas 15.47 per cent informants (10.1% older men and 20.79% older women) were found to be dependent on others for financial needs.

In a study based on data collected as part of the General Social Survey by researchers at the National Opinion Research Centre (NORC) at the University of Chicago the researchers looked at data from 30 countries where surveys, taken at two or more time points between 1991 and 2008, asked residents about their belief in God. Age seemed to be a big factor in belief. Belief in God was highest among older adults, with 43 per cent of those 68 and older saying they are certain that God exists and that they always had faith in God (Bryner J, 2018).

Some studies have reported more loneliness in females than in males (Singh, *et al.*, 1996; Gurudas and Lakshinarayan, 1989). Contributory factors for higher loneliness in females were loss of companion, illiteracy, less social contacts and maltreatment by the family members. It has been found that loneliness was significantly higher among the aged who were living alone as compared to those who were living with spouse, or couples who were living with the family.

A study on elderly examined the relationship between life satisfaction and physical status, emotional health, social support and locus of control in the frail elderly. A random sample of 99 low-income, frail elderly living in the community was interviewed. Almost 40 of participants reported high levels of life satisfaction (Abu-Bader, *et al.*, 2002). A study on 'Loneliness, depression and sociability in old age' by Mishra N (2009), conducted on the older adults of a Delhi-based region residing in the housing societies, was carried out on 55 elderly people (both men and women) in the age group of 60–80 years. The results of the study revealed a significant relationship between depression and loneliness. It was found that most of the elderly people were found to be average in the dimension of sociability and preferred remaining engaged in social interactions. The implications of the study are discussed in the article.

A study on 'Health and social problems of the elderly: a cross-sectional study in Udupi Taluk, Karnataka' was conducted by Lena, *et al.*, (2009) with the objective to study the health and social problems of the elderly and their attitude towards life. The study was carried out in the *Field practice area* of the Department of Community Medicine in South India. A total of 213 elderly patients (60 years old and above) who attended the outreach clinics were interviewed using a

pre-tested schedule. It was found that around 73 per cent of the patients belonged to the age group of 60–69 years old. Nearly half of the respondents were illiterate. Around 48 per cent felt they were not happy in life. A majority of them had health problems such as hypertension followed by arthritis, diabetes, asthma, cataract, and anaemia. About 68 per cent of the patients said that the attitude of people towards the elderly was that of neglect. The results of the study showed that there is a need for geriatric counselling centres that can take care of their physical and psychological needs.

Elderly people living alone are significantly more likely to suffer from these chronic as well as acute ailments than elderly living with their family. It was concluded by this study that elderly who are living alone have poorer health status, in terms of self-reported prevalence of acute and chronic ailments, than elderly who are living with their family (Agrawal, 2012).

Limitations

- The study was carried out for short and limited span of time.
- Interviewer bias can be present as the questionnaire was translated to respondents and selection bias might have occurred.

Conclusion

It was found during the study that quite a proportion of elderly were suffering from chronic diseases, viz. Hypertension and diabetes mainly. The most common physical impairment which they suffered was that of vision and hearing. Majority of the elderly admitted that they felt lonely every now and then and it leads to depressive thoughts. The self perception of elderly towards their health was found to be satisfactory as per the response of the majority. Most of the elderly people living alone stated that they also miss their respective families and want to live with them but at the same time, they do not want to be a burden and hurdle to the growth of their children. It was found that majority of the elderly population wished and desired to live a longer and healthy life when asked about it and most of them showed their satisfaction towards life. A number of reasons for the elderly to live alone emerged during the study. Most of them were because of their children living in other cities or countries, studying abroad or at

different locations or being married. Only a few stated that they live alone because it is their own choice. A lot of physical, psychological, social and economical factors came in light in this study that influence the quality of ageing. Significant correlations have been found between the age, gender and occupation of the elderly with their financial dependency, their preference of living, feeling of loneliness and self perception of their health status.

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Role of Grandparents as Voluntary Caregivers of their Grandchildren: A Comparative Study

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ABSTRACT

This paper compared care-giving pattern of children in India under care of grandparents (voluntary care-givers) and paid care givers. For this study, 100 children (50 children under grandparents' care and another 50 children under care of paid care-givers) of 4–12 years (single child of working parents) were selected purposively through random sampling from Kolkata City of West Bengal. Qualitative and quantitative data were collected on care-giving pattern, children as per backgrounds of care-givers and their care-giving role. This comparative study revealed that about 82 per cent of the children grown up under care of paid care-givers were demanding, quarrelsome, absent-minded and arrogant. Their educational attainment was dis-satisfactory. On the other hand, 90 per cent of the children under care of their grandparents were just opposite to the above group. Affection, teaching, supervision and monitoring of grandparents were child-friendly. Grandparents were happy for their involvement as care-givers, in spite of their own age-related physical problems. Caregiving helped in the improvement of their mental health. They could overcome their loneliness and isolation. On the other hand, paid care system was not enough for children's emotional development and the development of positive attitude in their life. Lastly, involvement of

grandparents in care giving might be a big help in achieving a good mental health.

Key words: child's behavior, paid care-givers, Parenting, Single child, Voluntary care-giver (kin)

Family is the basic social, cultural and economic unit of society in India (Goode, 1994). It is loaded with kin relations and the support system which protects a member of family from any sort of problem (Kakar and Kakar, 2007). Social bonding and social networking are typically strong in India's family system (Cochran, *et al.*, 1990). But due to number of variables this system is gradually deteriorating/breaking in present time. Urbanization and migration for employment has also brought about important changes in the structure of family (Uberoi, 2002). The emergence of nuclear family system (parents and child or children only) has weakend the ties of extended/joint family system (Grandparents-parents and paternal and maternal relatives, kin-brothers and sisters (Shah, 1998). In the joint family system the children of working mothers were looked after by their aunts, grandparents, or other relatives living in the household or nearby household. Due to the nuclear family pattern the urban households have fewer alternatives of care-givers (hired domestic help and formal day care centers) for working mothers (Joeke, 1989). In a nuclear family, specially in urban cities, if both the parents are working or are earners the situation is very difficult. They are mostly dependent on paid care-givers for their children.

Grandparents as informal/voluntary child care providers cover twin aspects of child care – when formal child care is unavailable and normative values and attitudes towards childcare (Glaser, *et al.*, 2013; Jappens and Van Bavel, 2012; Rutter and Evans, 2011). Grandparents' help for childcare had a significant influence on mothers' decisions to enter the labour market (Aassve, *et al.*, 2012), grandmothers are more likely than grandfathers to be engaged in childcare activities, particularly intensive childcare (Igel and Szydlik, 2011; Jappens and Van Bavel, 2012).

After parents' regular childcare, grandparents, and relatives, etc. are also the valuable care providers which are referred to as kinship care. Grandparents either paternal or maternal, who are younger and healthier, not economically active (retired or not employed), living close to their grandchildren are informal/voluntary care-givers. Their responsive care-giving has no cultural difference, and sensitive so that

it is more effective than insensitive and unresponsive care-giving of formal care providers (i.e. paid care giver or care giving agencies) (Lamb and Easterbrooks, 1981; Ainsworth, 1993 and Isabella, 1993). Better-educated grandparents with higher socio-economic backgrounds are more likely to be asked to provide childcare compared with grandparents with lower levels of education and lower socio-economic backgrounds. In addition, grandparents with fewer children and grandchildren are also more likely to engage in childcare. Lone parents, parents working long – or non-standard hours and parents from financially disadvantaged families are most likely to use grandparent care. The age of children also influences the pattern of grandparents' care, with grandparents most likely to provide care for preschool children, except the very young children and toddlers. Glaser *et al.*, 2013) provide figures on grandparents in the 'sandwich generation', who have at least one of their own parents still alive.

We find that urbanization changes the pattern and the nature of women's paid work, particularly with respect to the popularity of formal sector employment. It is more secured in terms of pay and security compared with working in rural setting (Horton, 1999). Eventually, urban jobs are generally less flexible with respect to hours and less compatible with child care than agriculture work in rural areas (Ruel, *et al.*, 1999). It generates work-family conflict. The trend of women's employment increases the need for substitute care while reducing the availability of traditional sources of such care. Generally more families of urban area seek assistance from outside the family because of the changing structure and functions of the family. The urban households have a lack of family network of relationship. And here is the necessity of hired domestic help or institutional child care in urban area (Ibid.).

The objective of this study was to compare the pattern/nature of care-giving under grandparents care (voluntary care-givers) and paid car-givers. Relational representations along with the social, cultural and economic environment are the key determinant factors of up-bringing process of a child (Saraswathi, 1999). Parents and grandparents provide appropriate control and strategies for child development through their teaching, supervision and monitoring (Wolfe, 1999). It facilitates the child's emotional development, sharing of cultural values and educational attainment (Emery, 1999). It is the

basis of child friendly environment for happy childhood (Jenks, 2003). Grandparents involvement also strengthens their mental health status because they are being integrated with their family where they do not feel loneliness or isolation. But paid care givers play their role and responsibility for physical care (management and care of a child) and they act as watchdogs where emotional aspect is not properly nurtured.

Method

For the purpose of this study, 100 children of 4–12 years of age were selected purposively through random sampling from Kolkata City of India. These children were living in urban housing colony developed by state government housing board and private construction/developer agencies. Of them, 50 children were under care of grandparents and another 50 children were under care of paid care givers. Their parents were dual earners, and all of them were the single child in the family. Qualitative and quantitative data related to care giving and care givers of both the categories, were collected by using interview schedule consisting of three parts (children, care-givers and parents) and case study method (Anandalaksmi, *et al.*, 2008). In the first part of the interview schedule consisted of information related to children's age, gender, school and class attending, their relational pattern with parents, grandparents or paid care givers, their attitude towards parents and other members, etc. Second part of this schedule was set for parents, social, economical, marital background and it also included their attitude towards child care and care-givers (grandparents or paid domestic help). Finally, data were collected from the paid workers to know their social, economical and educational background. It also included their age, residential location, marital relation, years of engagement in this work and their attitude towards their work assignment of child care, etc. The congregated data were analysed statistically and was presented through tables.

Result

Family Dynamics of the Informants

The families studied were truncated according to the structure and relational pattern. These urban families were set up either as 1st generation (parents of the children's informants) or as 2nd generation

Table 1
Structure and relationship among members in the family

Nature of care-givers	Structure and relationship						Total (n, %)
	Family consisting grandparents, parents and child			Family of parents and child			
	Living together (n, %)	Living separate in same place, but occasionally connecting (n, %)	Living outside (at natal place or others), but occasionally connecting (n, %)	Living together (n, %)	Living separate in same place, but occasionally connecting (n, %)	Living outside (at natal place or others), but occasionally connecting (n, %)	
Grandparents	50 (50)	—	—	—	—	—	50 (50)
Paid care-givers	4 (4)	6 (6)	10 (10)	8 (8)	4 (4)	6 (6)	50 (50)
Total	34(34)	12(12)	10(10)	8(8)	10(10)	12(12)	100 (100)

Source: Field Work.

(grandparents of the children's informants) due to their employment in urban areas. In both the cases, the settlers of these families narrowed their relationship with their natal family's members. However, table 1 presents the family dynamics of these families. Here, these families were divided in two categories-children's care-givers, i.e. a) children under grandparents' care and b) children under paid care-givers.

From the Table 1, it is revealed that cent per cent of these families (where children under care of grandparents) were nuclear and these families were loaded with grandparents, parents and child together under one roof. The structure and relationship of the families where children were under paid care-givers, revealed that 28 per cent of these families were nuclear. But only 4 per cent of members lived together, 6 per cent of them lived separately with occasional contact, 10 per cent of them lived outside (at natal place or others) with occasional contact, and 8 per cent of them lived outside without any contact. Among these families, 4 per cent lived separately in the same area with occasional contact, 12 per cent of these families set up outside the area with occasional contact, and 6 per cent of these families set up outside with no connection.

Parental social and educational background:

From table 2, it was revealed that 85.5 per cent parents were from Hindu community and only 14.5 per cent of them were Muslim. Among these parents whose children were under grandparents' care, 24 per cent of them belonged to the general category and 17 per cent of them (including 8% mothers) possessed post graduation and above level of education and 5 per cent of them were graduates. Of them, 18 per cent parents belonged to Schedule Castes (SCs) and 4 per cent of them (including 1.5 per cent mothers) had post graduation and above education. Another 4 per cent of them graduated, and 1 per cent (mother) had school education, 10.5 per cent of these parents belonged to Other Backward Classes (OBCs), 7 per cent of them were post graduates and above and 2.5 per cent of them graduated.

In case of the Muslim, 5.5 per cent parents belonged to general category and among them, 2.5 per cent parents were post graduate and

Table 2
Parental social and educational background

Parental educational background	Social background of parents										Total (n, %)
	Hindu					Muslim					
	General		SCs		OBCs	General		OBCs			
	Father (n, %)	Mother (n, %)	Father (n, %)	Mother (n, %)		Father (n, %)	Mother (n, %)	Father (n, %)	Mother (n, %)		
Parents of the children under grandparents' care											
School education	-	-	-	2 (1)	-	2 (1)	-	1 (0.5)	-	1 (0.5)	6 (3)
Graduate/Technical degree	6 (3)	4 (2)	4 (2)	4 (2)	3 (1.5)	2 (1)	3 (1.5)	2 (1)	1 (0.5)	1 (0.5)	30 (15)
Post graduate or above	18 (9)	16 (8)	5 (2.5)	3 (1.5)	7 (3.5)	7 (3.5)	3 (1.5)	2 (1)	2 (1)	1 (0.5)	64
(32)											
Parents of the children under care of paid care-givers											
School education	-	-	-	1 (0.5)	-	1 (0.5)	-	1 (0.5)	-	2 (1)	5 (2.5)
Graduate/Technical degree	8 (4)	8 (4)	4 (2)	2 (1)	5 (2.5)	3 (1.5)	2 (1)	2 (1)	1 (0.5)	1 (0.5)	36 (18)
Post graduate or above	17 (8.5)	17 (8.5)	5 (2.5)	2 (1)	7 (3.5)	6 (3)	2 (1)	2 (1)	1 (0.5)	-	59 (29.5)
Total (n, %)	49 (24.5)	45 (22.5)	18 (9)	14 (7)	22 (11)	21 (10.5)	8 (4)	10 (5)	5 (2.5)	6 (3)	200 (100)

Source: Field Work.

above education, 2.5 per cent parents graduated and 0.5 per cent parents has school education. Of them, 3 per cent parents belonged to OBCs and 1.5 per cent of them were post graduate and 1 per cent parents had graduation.

Parental backgrounds of the children under paid care-givers showed that among the Hindus, 25 per cent parents belonged to general category and 4 per cent of fathers and mothers graduated and 8.5 per cent possessed post graduation and above level of education. Of these parents, 14 per cent parents were SCs and 3.5 per cent of them (including 1% mothers) were post graduate, 3 per cent of them graduated and only 0.5 per cent mothers had school education. From OBCs, it was found that 6.5 per cent parents were post graduates and 4 per cent of them graduated and mother's education was 3 per cent and 1.5 per cent post graduation and graduation respectively. Among Muslims, 2 per cent each of these parents of general category were post graduates and graduates respectively. From OBCs, only 0.5 per cent fathers were post graduates and 1 per cent of the parents graduated.

Educational and relational status of grandparents as voluntary care-givers

In this study, up-bringing of 50 children were under care of their grandparents who were considered as voluntary care-givers and lived together with these children. They had no specific hours of this voluntary service. They performed it as their moral duties and responsibilities towards their younger.

Table 3
Educational and relational status of grandparents (voluntary care-givers)

<i>Educational status of grandparents</i>	<i>Relationship with children</i>		<i>Total (n, %)</i>
	<i>Grand mother (n, %)</i>	<i>Grand father (n, %)</i>	
School education	21(42)	–	21(42)
Graduate	10(20)	12 (26)	22(44)
Post graduate	1(2)	6(12)	7(14)
<i>Total (n, %)</i>	32(64)	18(36)	50(100)

Source: Field Work.

Their educational and relational status has been described in table 3. It was revealed that 64 per cent of them were children's grandmothers and among them 42 per cent had school education, 20 per cent of them graduated, and 2 per cent of these grandmothers possessed post graduation. These graduate and post graduate grandmothers were retired public servants. Among these voluntary care-givers 36 per cent were grandfathers. Of them, 26 per cent grandfathers graduated and 12 per cent of these grandfathers were post graduates. Among these grandfathers, 40 per cent were retired public servants.

Demographic profile of paid care-givers

Paid care-givers locally known as '*masi*' (aunt) were female folk at reproductive age (mostly) of the poor social and economic background. They joined in this care-giving job due to their adverse familial situation (i.e. petty husband income, lack of responsibilities of the husband towards family management, addiction in alcohol and victims of torture and violence by the husband, and no other alternative support from their natal as well as in-laws family). To some extent, it was a step of economical self-dependence with low or no other skills and education for any other alternative job. In this care-giving job, they were naturally skilled so that they preferred it as their occupation. It was revealed that 35 per cent of these care-givers were living in the city in a nearby slum of their workplace or suburban area. Majority (65%) of them were daily commuters from adjacent districts of Kolkata. There was no alternative income source in their locality according to their skill. So, they chose this job in spite of risk and various obstacles involved with.

From table 4, it found that 84 per cent of the paid care-givers were Hindu by faith and 16 per cent of them were Muslim. According to their age 36 per cent of them were within the age bracket of 20–30 years. Among the Hindu care-givers, 4 per cent of them were unmarried of the general category, 14 per cent of them were married belonging to general category. Among the SCs, 4 per cent of the females were married and 2 per cent females were deserted/divorcee. Of them, 4 per cent females were married of OBCs. Only 4 per cent of

the Muslim females of 20–30 years of age were married and they belonged to general category. Forty four per cent of these females were within the age group of 31–40 years. Among them, 14 per cent females were from the Hindu general category and of them, 8 per cent females were married and 6 per cent female folks were deserted/divorce. Equal per cent of these females belonged to SCs. Of them, 4 per cent females were deserted/divorce. Out of 6 per cent the females who were OBCs, 2 per cent of them were married, deserted/divorcee and widow respectively. Ten per cent of these Muslim women of 31–40 years of age, 2 per cent females were married of the general category and 4 per cent of them were married and deserted/divorce under OBCs. It also revealed that 10 per cent of these females were within the age bracket of 41–50 years and they were dominated by Hindu (19%). Out of these 19 per cent female paid workers, 8 per cent females belonged to the general category. Of them, 4 per cent females were married, 2 per cent each of them were deserted/divorcee and widow respectively. It was similar in case of females of SCs. Only 2 per cent of them belonged to OBCs was deserted/divorcee. Two per cent females of 41–50 years of age were Muslim and deserted/divorce.

Table 5
Educational status of paid care-givers according to their age

<i>Age of paid care-givers</i>	<i>Educational status</i>						<i>Total (n, %)</i>
	<i>Lettered (n, %)</i>	<i>Primary education (n, %)</i>	<i>Upto Class VI (n, %)</i>	<i>Class VII-VIII (n, %)</i>	<i>Class IX-X (n, %)</i>	<i>Secondary /Higher secondary and above level (n, %)</i>	
20–30 years	–	2(4)	6(12)	4(8)	4(8)	2(4)	18(36)
31–40 years	5(10)	8(16)	7(14)	2(4)	–	–	22(44)
41–50 years	5(10)	3(6)	2(4)	–	–	–	10(20)
Total (n, %)	10(20)	13(26)	15(30)	6(12)	4(8)	2(4)	50(100)

Source: Field Work.

Table 5 described educational status of these paid care-givers. From this table, it was revealed that educational status varied according to their age. The upper age females were less educated than

the younger females. Out of 36 per cent of these females within 20–30 years of age, 8 per cent had class VII-VIII and class IX-X standard education respectively. Further, 4 per cent had primary and secondary/higher secondary and above level education. Among them, 12 per cent females had education upto class VI. Ten per cent each of them were just lettered, and they were within the age group of 31–40 years and 41–50 years respectively. Sixteen per cent of them of 31–40 years of age had primary education, while it was 6 per cent in case of females of 41–50 years of age. The females of 31–40(14%) years of age had upto class VI standard of education, while it was only 4 per cent in case of females of 41–50 years of age. Further, 4 per cent of these females of 31–40 years of age had class VII-VIII standard of education.

Behavioural Pattern of the Children

Family's socio-economic and cultural, parental education and relationship and overall family environment, etc. determine the children's socialization (Saraswati, 1999). Social network and bonding of the family members are also influential factors of child's up-bringing. The most crucial factor is children's attachment with their care-givers. Table 6 described the children's behaviour that varied according to their care-givers. Ninety per cent of the children under grandparents care were polite, obedient, attentive and jovial. Further, 86 per cent of the children under paid care-givers were arrogant, demanding, absent-minded, inattentive and rigid.

Differences in care-giving of grandparents and paid care-givers

Duties and responsibilities of care-givers obviously differ. Voluntary care-givers were attached with children almost round the clock, even while their parents were in home. They used to look after children's feeding, dress, bathing, and so forth. Even, they used to play with children and they played the role of home teachers. They monitored their educational progress regularly. For the children of the upper age group, they accompanied the children for their school. Many cases, they attended the school buses or cars to receive them from school.

Duties and responsibilities of paid care-givers were limited for particular hours of a day, i.e. 8–10 hours and Sunday was usually their

Table 6
Age and sex-wise behavioural pattern of the children

Age Group	Behavioural pattern										Total (n, %)						
	Polite and Attentive and Obedient (1)		jovial (2)		(1) + (2)		Arrogant (3)		Demanding (4)			Absent-minded and inattentive (5)		Rigid(6)		3 + 4 + 5 + 6	
	M (n, %)	F (n, %)	M (n, %)	F (n, %)	M (n, %)	F (n, %)	M (n, %)	F (n, %)	M (n, %)	F (n, %)		M (n, %)	F (n, %)	M (n, %)	F (n, %)	M (n, %)	F (n, %)
Children under grandparents care																	
6-9 yrs	1 (1)	2 (2)	2 (2)	1 (1)	4 (4)	5 (5)	-	-	-	-	-	-	-	-	2 (2)	1 (1)	18 (18)
	2 (2)	4 (4)	2 (2)	3 (3)	8 (8)	11 (11)	-	-	-	-	-	-	-	-	2 (2)	-	32 (32)
Children under care of paid care-givers																	
6-9 yrs	-	-	-	-	2 (2)	3 (3)	2 (2)	1 (1)	2 (2)	2 (2)	2 (2)	2 (2)	2 (2)	1 (1)	6 (6)	4 (4)	28 (28)
10-12 yrs	-	-	-	-	1 (1)	1 (1)	1 (1)	-	2 (2)	1 (1)	2 (2)	4 (4)	1 (1)	1 (1)	4 (4)	4 (4)	22 (22)
Total (n, %)	3 (3)	6 (6)	4 (4)	4 (4)	15 (15)	20 (20)	3 (3)	1 (1)	4 (4)	3 (3)	4 (4)	6 (6)	2 (2)	2 (2)	14 (14)	9 (9)	100 (100)

Source: Field Work

holiday. They used to enjoy leave when required. They generally performed duties of feeding, dress, bathing and sometimes, they were also playing partners of these children. But they did not monitor and act as teachers for these children. Services of paid care-givers were mechanical/physical that varied according to their remuneration. In their services, emotional aspect was absent or thin.

Discussion

Parental attitude towards their child care

The study revealed that parental attitude towards child-care varied so far as care-givers were concerned. Parents depending on voluntary care-givers (grandparents) were satisfied that their children were getting attachment of their elders and it supported them to learn the culture of their family, family relations and value system. It was a healthy input for their socialization. Personally, these working parents were less worried and they were less suffering from anxiety about their child's care. It was very much helpful to tender their work in their respective work places. Even their late returning to home was not affected to their child's looking after. Further, they had no anxiety for their children's feeding and related care, receiving of the child from school, and their homework, etc. The child's naughtiness was not a cause of worry for some of them because their grandparents were affectionate as well as they had authority for any small punishment. They also involved in various indoor or outdoor games with these children. Psycho-social development generally facilitated through value judgmental system. The child learnt wrong and right things more easily. It reflected in their behavior and attitude in home and school. Their interaction with peers, younger child and older, i.e. parents and teachers was normal.

Comparing with the above, the parents of the children who were under care of paid care-givers were affected with anxiety, more so the mothers. They depended on care-givers with high level of dissatisfaction due to no other alternative care-givers. They were very much suspicious relating to their child care, i.e. feeding and other care. They were anxious during late coming from office because the care-givers services were time bound. When their schedule time passed over, they used to leave child alone. Further, parents were in anxiety about the

child's school home work for which either they looked after themselves or the private tutor was deputed for this. The care-giver tried generally to keep the child in sleeping because they did not relish the child's activities in home according to their choice. They did not pass quality time with the children through participation in game or storytelling, etc. which kin used to provide.

Attitudinal differences of voluntary care-givers (grandparents) and paid care-giver

Paid care-givers were mostly young aged women of the poor background. Their basic focus of this work was earning money to meet their basic needs. It was their job only. They were more involved physically than their emotional involvement in child care service. They only performed their assigned duties and responsibilities which again varied according to their remuneration. They did not attach with the emotional needs of these children.

On the other part, grandparents as voluntary care-givers had emotional attachment with these children. These children would renew their race with family values and culture. So, monitoring of healthy childhood was the prime moral goal of their services. Moral and psychosocial development was their concern. They did not perform a perfunctory job. They had wholehearted devotion and sacrifice for strengthening the future of their younger generation. Deprivation and negligence were absent in their work of child care. While paid care-givers were indifferent about the child's moral and psychosocial development because of some limitations of their authority and power, grandparents were beyond this stricture. They had authority and power like child's parents for the child's betterment.

Comparison of psychosocial development and behavioural pattern of the children under different care-givers

Paid care-givers were instrumental in their services. Emotional/expressiveness in their quality of services was thin. Their educational, cultural and socio-economic background was different from the background of their employers. They had no training in this service. Obviously child care system and development of childhood in

their family or in their cultural set up varied from their job in assigned family. This was a mismatch in their quality of services so far as the child's psychosocial development was concerned. Usually, material dependence shaped their mental state with unreality. So, they were more demanding, absentminded, rigid, inattentive and quarrelsome. Rigidity and inattentiveness hampered their educational attainment as desired and the performance in school was unsatisfactory.

Side by side, the children under care of kin were morally healthy and they were attentive in their jobs. Their performance in school was better and satisfactory.

Grandparents mental health status

From this study, it was revealed that grandparents were very much happy with their jobs of grandchildren's care. They felt integration with their families with respect and dignity. Their grandchildren's care was their positive and quality involvement and it had kept them from isolation and loneliness in their daily affairs.

Conclusion

It might conclude that grandparents' care is more effective, sensitive and responsive than that of the paid care-givers. Attachment to the grandchildren and involvement for their care is a positive input for grandparents' mental health. It has integrated them in their family with value and respect. It is also a step to save the elderly from isolation and negligence in their post retirement life.

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Assessment of Old Age Pension Scheme in Rural Uttar Pradesh: A Preliminary Analysis

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ABSTRACT

The objectives of the present study were to know about the awareness level of the elderly regarding Old age pension (OAP) scheme and how the elderly benefited from the scheme according to their socio-economic status. The study was based on a sample of 600 aged people (Male+303 and Female+297) of age varying from 60 years and above, belonging to rural areas of 'Uttar Pradesh' of India. The sample was drawn by applying a multistage random sampling technique. Chi-square test and logistic regression analysis were carried out to analyse the data. The findings indicate that male, widow/widower, elderly aged 80 and above, SC/ST's elderly with low socio-economic status and having bad health were more frequently availing the OAP scheme; and this scheme is supporting the elderly to live life with dignity and respect. It was found that in later life, being a non-productive member of the family is the main reason behind the poor status of the elderly in India. Due to this reason, family members treat them as a liability and the elderly

started losing the respect in the family. OAP scheme enabled the elderly to contribute in the family expenditure and lead their life with dignity.

Key words: Destitute elderly, Indira Gandhi National Old Age Pension Scheme, Social support, Helpless, Dignity

India is undergoing the process of drastic demographic transition. There is a relative increase in the number of aged persons (60+) and also their proportion in the population. Population ageing has considerable implications for the social security system. Indian family structure is in its transition state; it is shifting from joint family to nuclear family. Traditionally, older people were viewed as an integral part of the family, having high esteem and prestige. The decrease in the number of children, and their dispersion owing to migration and urbanisation, has reduced the amount of care given to dependent aged parents. Desertion of old parents has shot up as a serious problem to the extent that government enacted law in 2007. Though right of parents without any means to be supported by their children having sufficient means has been reorganised by section 125 (1) (d) of the code of criminal procedure 1973, and section 20 (3) of the Hindu Adaptation and Maintenance Act, 1956 was already there. The elderly need certain amenities such as health care, nutrition, and a sense of belonging, but the type and amount of treatment they receive mainly depend on the culture of the family. In many cases, elderly people are neglected by their family members unless they are well-to-do or still earning members (Patel, 1997; Surender, 1997; Vijayanunni, 1997; Kumar and Upadhyaya, 1999; Yadava, *et al.*, 2003; Audinarayana and Kavita, 2003; Audinarayana, 2004). The quality of relationship with sons and daughters is largely determined by the economic factors, which, in turn, determines the health of elderly people. The elderly need a sympathetic, caring and sharing attitude and behaviour from their family members. But if they are contributing either economically or physically, which is useful for the family, then they are continued to be respected and are treated as an 'asset' for the family; otherwise, they are viewed as a 'liability' (Kumar, *et al.*, 2005; Joshi, 2006).

In India 90 per cent of the older persons are in the unorganised sector or informal sector with no social security cover; 30 per cent of them live below the poverty line and the other 33 per cent are just

marginally over it. Therefore, to meet the monetary needs of the aged people who had no source of income to meet the basic needs, the Government of India in 1995 adopted the National Social Assistance Programme (NSAP), in which National Old Age Pension scheme (NOAPS), the National Family Benefit Scheme (NFBS), and the National Maternity Benefit Scheme (NMBS) were started. The amount of the old age pension in 1995 was Rs. 100 (Rs. 75 contributed from central government and Rs. 25 from respective state/Union territory) per month per beneficiary. The NOAPS was modified in November 2007 and renamed as the 'Indira Gandhi National Old Age Pension Scheme' (IGNOAPS). As per the eligibility criteria of old age pension under IGNOAPS, old age pension is now being granted to all persons who are 65 years or higher and belonging to a household below the poverty line according to the criteria prescribed by the Government of India and the pension amount was increased from Rs. 75 to Rs. 200. At the time of enhancing the rate of pension from Rs. 75 to Rs. 200. All the States were advised to contribute up another Rs. 200 per person per month so that a pensioner could get at least Rs. 400 per month. Presently 16 States are contributing Rs. 200 or more, 10 States are contributing less than Rs. 200 whereas there is no contribution from the 9 remaining States. Several States including Uttar Pradesh are having their own widow pension and disability pension schemes and some of them are also granting old age pension for persons who are above the age of 60 years. In Uttar Pradesh the provision is that the destitute elderly people above 60 years of age were supposed to get Rs. 300 as OAP (Rs. 200 from centre and Rs. 100 from the state government) and information about belonging to BPL family was not mentioned. Recently from the month of August 2018 U.P. Government has increased old age pension from Rs. 300 to Rs. 800.

In a study (Rajan, 2001), it was found that only 10 per cent of the elderly population in India was served by NOAPS. However, this percentage varies across different states in India. In Kerala, about 20 per cent of the aged have access to old age pension while only 5 to 15 per cent of the elderly hold this privilege in other states of India (Dev, 1994).

Based on information collected primarily from 600 rural elderly people, the researchers in this study tried to investigate some of the

issues related to (i) the current awareness status about the old age pension scheme, and (ii) what extent the scheme has generated the needed benefits. Taking the above two factors as dependent variables, the role of a number of socio-economic and demographic factors as independent variables were examined.

Methodology

A sample of 600 people was drawn by applying a multistage random sampling technique. The sampling procedure was completed in different stages. At first stage, six districts were selected on the basis of stratum provided by Planning Department Uttar Pradesh. The Planning Atlas Uttar Pradesh, published by the Government of Uttar Pradesh (2006), segregated all districts of UP into five categories (less than 0.5 – very low, 0.5–0.54 – low, 0.54–0.6 – medium, 0.6–0.65 – high and 0.65 and above – very high) based on Human development Index (HDI). From each category (except lowest), one district was selected randomly and two districts were selected from the lowest category. A total of six districts namely Varanasi, Ghazipur, Shravasti, Mahoba, Lucknow, and Moradabad were finally selected. The selection of block, village and households from a district formed different stages of sampling technique. The data at both the levels: household level and at the individual level (elderly person concerned) was collected.

The basic instrument of data collection was a personal interview method. The interview schedule contained questions on household structure, household facilities and other details to have an idea about the occupational, social and economic status of the household. The individual schedule included questions relating to age, gender, marital status, caste, religion, education and health status of elderly people.

Dependent and Independent Variables

1. Dependent variables: In present study, the awareness regarding OAP scheme and availing OAP were dependent variables. Questions related to both the variables had dichotomous responses as 'yes' and 'no'.
2. Independent variables: The possible predictors of the dependent variables were included the socio-economic and demographic

information such as age, gender, marital status, caste, religion, educational level, health status of elderly people. The respondents of this study were classified into three age groups: 60–69, 70–79 and 80+. Marital status was categorised as—presently married and widow/widower. Caste was classified into three categories – ‘General’ (those who are considered to be socially and economically forward and privileged castes), ‘OBC’ (other backward castes; those who are considered to be socially and economically backward castes) and ‘SC/ST’ (schedule castes/schedule tribes; those who are very backward and underprivileged section of society and were earlier treated as untouchables, excluded from Indian Hindu Society and now scheduled in Indian constitution). Educational level was categorised as ‘no schooling’ (those who didn’t get education through formal schooling system), ‘up to lower secondary’ (up to 8th) and ‘secondary and above’ (9th and above). The researchers also tried to know about the respondents occupation before age 60 and was classified as, agriculture (both farmer and agricultural labourers), service (Both government and private job), business (large as well as small scale like tea stall), housework (unpaid work in household). In the present study, household information regarding the social and economic status of the household, type of house, family type, availability of agriculture land and main source of household income were also considered. ‘Social status’ was defined on the basis of different kinds of facilities available in a household. Facilities included in this study were – (1) Total income in excess of Rs. 3,000 per month, (2) Land possession in excess of 3.125 acre, (3) residential accommodation more than one ‘pukka room’, (4) regular use of milk and vegetables, (5) education at graduate level of at least one member of the household, (6) possession of at least two of the following facilities; (i) drinking water facilities-well/hand pump/pumping set, (ii) entertainment facilities-radio/tape-recorder/TV/VCR, (iii) travelling or transportation facilities-bicycle/scooter/motorcycle/car/jeep, (iv) kitchen facilities-gas chulha (stove)/bio-gas chulha, (vii) other facilities-electricity/toilet. In light of availability of facilities mentioned above, their social status was classified into three

different groups as low – if at most one facility was available in the household, middle – if two or three facilities were available in the household and high-if four or more facilities were available in the household. '*Economic status*' of the household was calculated after computing income index. The income index of a household was defined as the ratio of total earning from all sources of a household to effective size of the household. The effective size of a household is defined considering each person aged above 14 years as one unit, and aged 14 or less than 14 as half unit. After calculating the total earnings from all sources and effective size of the household, the income index (I.I.) = total earning of a household ÷ effective size of the household. Thus, the economic status of a household was classified into three groups as Low, Middle and High. If I.I. lies in the categories I.I. < Rs. 301, Rs. 301 < I.I. < Rs. 501 and I.I. > Rs. 501 respectively. '*Health status*' of the respondents was accessed by the self-reporting answer about their health as 'good', 'moderate' or 'bad'. '*Type of house*' was classified into three categories – kachcha (mud), half pakka, and pakka. '*Type of family*' the respondents belong to was recorded into three categories as alone, nuclear and joint. Main source of household income was categorised as salary/wage daily, agrarian activities, and business.

Result and Discussion

In the present study out of 600 respondents 50.5 per cent (N=303) were male and 49.5 per cent (N=297) were female and 32.3 per cent respondents were found to be widow/widower while 67.7 per cent were presently married. To find out the awareness about OAP scheme provided by the government (State/Central), respondents were asked some questions given in table 1 (below). It was found that only 33 per cent elderly people knew about the old age pension scheme and the percentage of the elderly availing this scheme was almost half of the elderly who were aware about the scheme (16.7%). 20.83 per cent (125 persons) among all the respondents found to be below 65 years of age and 6.4 per cent (8 persons) among the elderly below 65 years of age were availing OAP (not mentioned in table). All the beneficiaries were getting the pension amount through their bank account.

In response to a question related to sufficiency of the OAP amount they were getting, 89 per cent OAP beneficiaries expressed that the amount they are getting is not sufficient. The expectation of OAP up to Rs. 400 per month was expressed by 5.6 per cent of total benefitted respondents. 52.8 per cent expressed their expectation that the amount should be between Rs. 401 to Rs. 600; and 33.7 per cent expected it between Rs. 601 to Rs. 800 while 7.9 per cent expected it above Rs. 801 (not shown in table). The respondents also reported that they were not getting OAP regularly (on monthly basis). Most of the times the amount credited in their saving bank account was delayed up to six months and because of this some inconvenience was reported by the respondents informally. The respondents also reported how they spend the pension amount (for detailed information see table no.1).

Table 1
Distribution of the Respondents According to their Awareness Regarding OAP Scheme and the Way of Expending OAP

	<i>No</i>	<i>Yes</i>	<i>Total</i>
Know about OAP scheme	402 (67.0)	198 (33.0)	600
Availing OAP	500 (83.3)	100 (16.7)	600
Is the pension amount sufficient?	89 (89.0)	11 (11.0)	100
Expend OAP by him/her self	13 (13.0)	87 (87.0)	100
Expend on Food/Cloths	4 (4.6)	83 (95.4)	87
Expend on Medicine	6 (6.9)	81 (93.1)	87
Expend on Travelling	36 (41.4)	51 (58.6)	87
Expend on Guest Hosting	44 (50.6)	43 (49.4)	87
Expend on intoxicants	34 (39.1)	53 (60.9)	87
Expend on grand-children	25 (28.7)	62 (71.3)	87

The male elderly people were found to be more aware and benefited in comparison to female respondents. Sex differences in the awareness about OAP scheme was found significantly different ($\chi^2 = 5.1$; d.f. = 1). So far as the OAP beneficiaries according to marital status is concerned, the percentage of widows/widowers was higher compared to presently married elderly and this association was found statistically significant. It was found that the elderly of those of advanced age were more benefited of OAP scheme compared to their counterparts, i.e. more beneficiaries were reported with increased age of the elderly person. The elderly belonging to OBC category were

found more aware about OAP followed by SC/ST and General Categories but interestingly among the aware respondents, the elderly belonging to SC/ST found to be more benefited by this scheme (see table No.2 given below).

Table 2
Awareness and Availing of OAP According to Socio-economic and Demographic Characteristics of The Elderly

<i>Variables</i>	<i>N=</i> <i>600</i>	<i>Aware of</i> <i>AP scheme</i>	<i>χ2 -value</i>	<i>N=198</i>	<i>Availing</i> <i>OAP</i>	<i>χ2-value</i>
Socio-economic and demographic characteristics						
Gender						
Male	303	113 (37.3)	5.1 p < 0.05	113	62 (54.9)	2.0
Female	297	85 (28.6)		85	38 (44.7)	NS
Marital Status						
Presently Married	406	132 (32.5)	0.1 NS	132	51 (38.6)	22.3
Widows/Widowers	194	66 (34.0)		66	49 (74.2)	p < 0.001
Age						
60 –69	314	94 (29.9)	2.8 NS	94	35 (37.2)	14.7
70–79	186	68 (36.6)		68	39 (57.4)	p < 0.01
80 and above	100	36 (36.0)		36	26 (72.2)	
Caste						
General	170	39 (22.9)	11.1 p < 0.01	39	17 (43.6)	13.4
OBC	177	96 (54.2)		96	22 (22.9)	p < 0.01
SC/ST	253	63 (24.9)		63	61 (96.8)	
Religion						
Hindu	465	161 (34.6)	2.7 NS	161	78 (48.4)	4.5
Muslim	125	35 (28.0)		35	22 (62.9)	NS
Others	10	2 (20.0)		2	0 (0.0)	
Education						
No Schooling	461	148 (32.1)	2.7 NS	148	82 (55.4)	15.7
Up to Lower Secondary	109	36 (33.0)		36	18 (50.0)	p < 0.001
Secondary and above	30	14 (46.7)		14	0 (0.0)	
Social Status						
Low	172	87 (50.6)	37.2 p < 0.001	87	62 (71.3)	p < 0.001
Middle	243	72 (29.6)		72	35 (48.6)	
High	185	39 (21.1)		39	3 (7.7)	

Cont'd...

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Economic Status						
Low	273	110 (40.3)	20.0 p<0.001	110	72 (65.5)	32.2 p<0.001
Middle	138	49 (35.5)		49	23 (46.9)	
High	189	39 (20.6)		39	5 (12.8)	
Occupation before age 60						
Agriculture	215	67 (31.2)	20.5 p<0.001	67	41 (61.2)	6.3 NS
Service	51	24 (47.1)		24	8 (33.3)	
Business	36	22 (61.1)		22	11 (50.0)	
House work	298	85 (28.5)		85	40 (47.1)	
Health status						
Good	109	36 (33.0)	2.6 NS	36	11 (30.6)	15.1 p<0.01
Moderate	274	82 (29.9)		82	36 (43.9)	
Bad	217	80 (36.9)		80	53 (66.3)	
Household Information						
Type of Family						
Alone	75	36 (48.0)	20.1 p<0.001	36	24 (66.7)	4.6 NS
Nuclear	40	22 (55.0)		22	10 (45.5)	
Joint	485	140 (28.9)		140	66 (47.1)	
Type of House						
Kachcha	139	59 (42.4)	13.0 p=0.001	59	39 (66.1)	21.5 p<0.001
Half-Pakka	252	88 (34.9)		88	49 (55.7)	
Pakka	209	51 (24.4)		51	12 (23.5)	
Availability of land for Agriculture						
No	119	50 (42.0)	5.5 p<0.05	50	30 (60.0)	2.4 NS
Yes	481	148 (30.8)		148	70 (47.3)	
Main Source of House hold Income						
Salary/Wage Daily	333	121 (36.3)	21.4 p<0.001	121	67 (55.4)	5.4 NS
Agrarian Activities	200	44 (22.0)		44	16 (36.4)	
Business	15	6 (40.0)		6	4 (66.7)	
Bank Deposit	52	27 (51.9)		27	13 (48.1)	
Total	600	198		198	100	

In the present study, a high proportion of the elderly (76.8%) were found to be illiterate and in spite of this they were found to be more benefitted by OAP scheme compared to highly educated elderly. Although due to lack of education, awareness regarding OAP scheme was very little among the illiterate elderly. The elderly belonging to low social, economic and bad health status were more aware of OAP

scheme and among them more than half of the elderly people were getting OAP and were found associated with the social, economic and health status of the elderly. The type of house was also found to be associated with the awareness status regarding old age pension scheme of the elderly ($\chi^2 = 20.1$; d.f. = 1). Usually it is seen that a 'Kuccha' house (a type of house made of mud) indicates a symbol of poorness and belongs to the lower strata of society. This category of households generally belongs to the alone or nuclear kind of families. In this study the elderly living in 'Kuccha' house were found more aware and benefitted of OAP scheme. Since OAP scheme targets the weaker and poorer section of society. So, it is desirable to know the financial background of the elderly. Availability of land for agriculture, nature of work before age 60 and main source of household income are supposed to be worthwhile here to know the financial background. All these variables were found to be associated with the awareness regarding old age pension scheme. The awareness about OAP scheme among the elderly having no agriculture land, whose main occupation was business before age 60 and current source of household income was 'bank deposit', was found more in the present study. In some previous studies including one done by I. Rajan, 2001, found that the weaker section of the society are more benefitted than others by old age pension scheme and the similar results were also found in the present study.

Table 3 and 4 show the results of logistic regression analysis to assess the impact of various socio-economic and demographic variables on the awareness status and recipients of OAP among the elderly.

Table 3
Final Modal of Logistic Regression (backward elimination procedure) Using Awareness about OAP Scheme as Dependent Variable

<i>Variables</i>	<i>B</i>	<i>S.E.</i>	<i>d.f.</i>	<i>p-value</i>	<i>Odds ratio</i>	<i>95% CI for Exp (B)</i>
Caste						
General			2	0.028	<i>Reference</i>	
OBC	0.725	0.272	1	0.008	2.065	1.211–3.518
SC/ST	0.470	0.268	1	0.079	1.600	0.947–2.704

Cont'd...

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Education							
No Schooling			2	0.052	Reference		
Up to lower secondary	0.393	0.278	1	0.008	2.065	1.211–3.519	
Secondary and above	1.121	0.486	1	0.021	3.068	1.183–7.955	
Social Status							
Low			2	0.000	Reference		
Middle	–0.825	0.228	1	0.000	0.438	0.280–0.686	
High	–1.282	0.307	1	0.000	0.277	0.152–0.507	
Type of Family							
Alone			2	0.007	Reference		
Nuclear	0.573	0.433	1	0.186	1.773	0.759–4.146	
Joint	–0.505	0.303	1	0.095	0.604	0.334–1.092	
Occupation before age 60							
Agriculture			3	0.018	Reference		
Service	0.448	0.359	1	0.212	1.565	0.774–3.163	
Business	1.035	0.411	1	0.012	2.815	1.258–6.298	
House work	–0.147	0.219	1	0.501	0.863	0.562–1.325	
Main Source of House hold Income							
Salary/Wage Daily			3	0.064	Reference		
Agrarian Activities	–0.486	0.231	1	0.035	0.615	0.392–0.967	
Business	0.493	0.585	1	0.400	1.638	0.520–5.158	
Bank Deposit	0.256	0.341	1	0.453	1.292	0.662–2.521	

The above table displays the results of logistic regression analysis taken all the variables together for predicting the likelihood of having awareness or not regarding the old age pension scheme. The final model included caste, education, social status, type of family, occupation before age 60 and main source of household income as independent predictors of the awareness status. The elderly belonging to OBC caste category were more likely to be aware about OAP scheme in the study. The above table also shows that almost 60 per cent increase in odds of being more aware about OAP scheme amongst the elderly who belonged to SC/ST caste. It may be due to the poor economic status of the people belonging to these categories as compared to general caste category. Also, compared to uneducated elderly people who have had done some formal schooling were more likely to be aware about the OAP scheme. Social status of the elderly was found to be associated with the awareness regarding old age pension scheme. In the present study, the aged of middle and high social status were less likely to know about the OAP scheme. Nature

of work before the age of 60 years was also found to be associated with likelihood of awareness. The elderly engaged in business work before the age of 60 were more likely to know about the scheme. As far as the main source of household income is concerned, the elderly belonging to the households where agrarian activities were found to be the main source of income were less likely to have knowledge about the old age pension scheme.

For predicting the likelihood of availing the old age pension, the final modal of the logistic regression analysis included sex, marital status, age and social status as independent predictors and the results are shown in table 4. Elderly females were less likely to avail the old age pension in the study. Marital status was found to be one of the important contributory factors in explaining the likelihood of availing the OAP. In our study, the elderly who were found widow/widower and in the oldest old (80 and above) age segment were more likely to avail the OAP. Also the elderly who belonged to the middle and high social status were less likely to avail the old age pension. The corresponding table shows almost 66 per cent and 98 per cent decrease in odds of availing the old age pension amongst the elderly of middle and high social status respectively.

Table 4
Final modal of logistic regression (backward elimination procedure) using beneficiaries of OAP as dependent variable

<i>Variables</i>	<i>B</i>	<i>S.E.</i>	<i>d.f.</i>	<i>p-value</i>	<i>Odds ratio</i>	<i>95% CI for Exp (B)</i>
Sex						
Male					Reference	
Female	-1.399	0.417	1	0.001	0.247	0.109-0.559
Marital Status						
Presently Married					Reference	
Widow/Widower	1.786	0.431	1	0.000	5.965	2.563-13.886
Age						
60-69			2	0.020	Reference	
70-79	0.815	0.418	1	0.051	2.259	0.996-5.126
80 and above	1.304	0.521	1	0.012	3.683	1.326-10.226
Social Status						
Low			2	0.000	Reference	
Middle	-1.091	0.390	1	0.005	0.336	0.156-0.721
High	-3.901	0.731	1	0.000	0.020	0.005-0.085

Conclusions

Using a community based data taken from different parts of a most populous northern state in India, it was attempted to search out some possible determinants about the knowledge and availing the old age pension in Uttar Pradesh. The strength of the study is that it is based on a large and diversified population sample of elderly people. Some important possible predictors have been identified that may explain the variance among aware and benefited elderly people regarding old age pension in a normal population. Very few previous investigations in India, especially in south India, assessed the government old age pension scheme but to the best of our knowledge no study evaluated the OAP scheme among rural elderly people in Uttar Pradesh.

At the time of survey, we got very small percentage of the elderly availing OAP in the study areas. It was found that most of the respondents had applied for OAP but their applications were under process till the time of interview. We found that some respondents, who were socially and economically strong, did not express desire to get OAP although they appreciated the OAP scheme. Interestingly, the elderly who were availing the pension, majority (89%) of them were not satisfied with the OAP amount. It has been seen that behaviour of household members depends on the economic activity/productivity of the elderly person concerned. An elderly pensioner usually gets better response regarding food, lodging, caring, etc. from his/her family members than others if he/she is getting OAP. On the other hand, an elderly person gets poor response from his/her family members if he/she is totally dependent on others for his/her daily necessities and caring, particularly in the lower strata of the society. Also in this study, the elderly who expended their old age pension amount by themselves, maximum of their expenditure was on food/cloths followed by medicine and on their grandchildren.

Now about fifteen years since the inception of government old age pension scheme, majority of elderly people in the study area were lacking knowledge about OAP Scheme. Illiteracy was found one of the important significant factors for unawareness. The increased

educational level tends towards better knowledge about the old age pension scheme. Also, the occupation of the elderly before the age of sixty years showed significant impact on the knowledge of OAP scheme. Service class and business community were found to be highly linked to the knowledge of OAP scheme. It means the elderly who were engaged in activities outside the home and assembled with different kind of people had better knowledge compared to their counterparts. The variables such as age, sex, marital status and social status emerged as significant variables to explain the status of availing old age pension which implies that among oldest old age segment of the elderly, widow/widower, male elderly and of low social status, the higher proportion of the elderly were getting the old age pension.

The findings indicate that still majority of the needy elderly people are not aware about the old age pension scheme. Of course, those elderly who have the awareness are not lagging behind to take the advantage. So, we would like to draw attention of our policy makers to some suggestions on the basis of our findings:

- Since the majority of the elderly were found not to be aware of OAP Scheme, so it is very necessary to make them familiar and aware to this scheme;
- In view of the rising cost of essential commodities, the amount of Rs. 300 per month is very low. This amount is not sufficient especially for those elderly who do not have any other financial support. Hence, the amount of pension needs to be increased.
- It was found in our study that pension is disbursed biannually and sometimes it is more delayed. So, it is suggested that amount should be disbursed regularly, i.e. on monthly basis.

In the light of the above suggestions, the government should take necessary initiatives so that each and every needy aged avail the old age pension scheme and meet the basic needs of their life.

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Body as a Site of Expressions: Intersections of Sexuality, Desires and Ageing

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ABSTRACT

Legally void (Berger, 1982) and socially excluded, the people of the LGBT community represent the everyday struggle an identity can bestow upon an individual. Ageing, since is an inevitable process, presents a myriad struggles in everyday life, and hence as human professionals, it is our prerogative to understand if the LGBT identity adds further vulnerabilities to the elderly population. LGBT elderly can be possibly availing the services for the older persons, but certainly there are unmet needs that may pertain specifically to this specific group in the older age, which this article seeks to understand. Rooting in the qualitative method of social research, this article uses a case study of a fifty seven year old gay man to understand if any vulnerability or possibilities of vulnerability prevails within this community. Within the LGBTQ spectrum, the article largely discusses the issues that can pertain to gay man, but certainly this can be used as a basis to articulate issues that may pertain to the whole community rather than just this specific subgroup.

Key words: LGBT elderly, Ageing, Sexuality, Vulnerability, Care giving responsibility, Social security, Quality of life

Borrowing from Foucault (1990)¹, Butler (1999, 2004) and Gagnon and Simon (1974), the author establishes that sexuality is

dynamic in nature and is an interplay of and between an individual's socio-legal environment, cultural practices and psyche. It may be said that with the emergence of institutions like law, psychiatry, medicine and government (Foucault, 1990), the idea of two-binaries and heteronormative relations started to recursively reproduce in the social structures (Giddens, 1984)² and hence the gender binaries and heteronormativity started to emerge as the only acceptable form of sexuality.

Early stages of life have been established as the time when an individual conforms to heteronormative gender roles or expressions (Gunn, 2011) or divulges from it to develop an alternative form of sexuality (Mishra, 2016).³ Ageing with same-sex identity can impinge various forms of vulnerabilities within an individual's life, adding to the decreasing capacity and health. Declining sexual activity, issues of companionship and loneliness are common within the elderly gay men (Berger, 1982). Although, studies like that of Fredriksen (1999) help us to counter myths which mention that LGBT persons do not have family or care giving responsibilities.

Claes and Moore (2000) and Berger (1982) concludes that homosexual elderly may be facing similar problems as that of elderly heterosexuals, but certainly the health-illness related to AIDS or fear of losing independence due to illness can be an added concern. Evidently, Claes and Moore (2000) and Quam and Whitford (1992) identify economic concern within the homosexual elderly or the elderly population in general, where the economic security is not enough to sustain a decent standard of living. If I position the transgender community in this thesis, under the established fact that transgender people face economic inequality (Morno, 2004; Mishra, 2016), it could be deciphered that transgender population is more prone to poor standard of living and economic crisis in old age, largely borrowing from the idea that they have been facing discrimination in economic sphere in the course of their life.

Another intersection of sexuality, ageing and economy could be visualized with the understanding that a considerable population of the LGBT or importantly transgender population earns from sex work (Mishra, 2016). Since this profession largely floats around the notions of beauty and youth majorly, the elderly transgender may face

lack of economic opportunity due to their increasing age and declining expressions of sexuality. Keeping sexuality, economy and old age in the perspective, another vulnerable elderly population can be of female sex workers and their subsistence and economic adaptability can be understood to develop researches in the domain of sexuality and ageing.

In lines of the binaried and heteronormative structuring of social spaces and institutions, the LGBT elderly population may have concern with care giving in institutions (Taylor and Robertson, 1994), where the acceptance of the institutionalized care giving services towards homosexuals, can emerge as a major concern in old age, if a person is unable to avail care within the home itself. Furthering this, the LGBT persons might have to either continue the practice of inhibiting alternative sexual expressions, if in institutions, or they might face discrimination due to the alternative nature of their sexuality. The gap that lies in this framework is due to lack of considerable information on the response of Indian old age institutions towards the LGBT population, and hence not much thesis can be developed with specific context to India.

The purpose of this study was to seek the attention of the human service professionals (social worker), policy makers and gerontologists towards the gendered aspects of ageing, largely tilting towards the intersection of sexuality and ageing. The study will also seek to help the readers to see the research questions and gap that emerges in the epistemological understanding of the intersections between sexuality and ageing.

Methodology

The study is based on a case study of a fifty seven year old gay man. The researcher used the purposive sampling largely with the inclusion criteria of age above 55 years. This has been done in light of the fact that it is quite hard to find any respondent from this marginalized group.

The interview was conducted through telephone and it lasted for around thirty minutes. The interview consisted of questions pertaining to sexuality, family, health issues, mental health, economic

security and care giving needs. The interview was conducted with proper formal consent (please see Annexure).

The study used the phenomenological paradigm, which asserts that lived experiences of the individual can be used to understand a phenomenon.

Part III Ageing Desires

‘Shaping’⁴ the Body

The initial years of Ramesh (name changed) were spent in deciphering the nature of his sexual attraction. For him, the bodies of men were more intriguing than that of women and this he recalls from his memories of his swimming class in his school, he states

‘I think I realized about my same-sex feelings when I was fifteen. I realized it by seeing the body of my classmates when we used to change for swimming lessons, boys’ bodies were more interesting than the girls.’

Ramesh indicates to have used majorly the library and academic resources for understanding the idea of his sexual attractions and he had been able to concrete it before he left for USA and gathered rich data pertaining to same-sex attractions. USA had helped Ramesh learn about the threat of AIDS within the LGBT community. A major loss that Ramesh had to bear in the early years of his life was due to the death of his parents, and this information is valuable in understanding the issues of loneliness, lack of familial relations, and care in later stage of life.

Body as a Site of Ageing

Gerontological perspective helps us in visualizing body as an import site of the expressions related to old age. Here expressions relate to visual attributes, bodily characteristics and behavioral expressions. Body can be seen as a transforming entity, wherein with every stage of life, it embodies certain characteristics that complement the stage of life a person is in. Although, in old age, body can be visualized as a physical entity limiting the desires and inhibiting expressions. I envisage body emerges as a major site of representation of elderly characteristics. With the loss of vigour and youth, the physical features

of the body start to degenerate and one can be visualized to have declining beauty and attraction. This can have an impact on the bodily expressions and exercise of sexuality.

Body turns to a site of suffering in old age when an individual develops chronic illness or a phase of prolonged illness. Certainly the sexuality can be a reason for illness like HIV or STD, that can lead to AIDS in old age and hence the body can be visualized to be transforming from a site of free sexual expressions to a site of illness. Certainly body can be seen as a limiting factor for the realization of sexuality or desires as the physical attributes may not be in sync with desires, or the physical attributes alter the desire of the psyche. Body and bodily expressions may change at old age due to the social environment or change in social roles, adding with the declining libido, degenerating beauty and physical strength, I establish body as a site of changing expressions, vulnerabilities and illness.

Withering Body: The Narratives of Illness

As it has been established that a major vulnerability in old age is health (Kaushik, 2013), I have found in my case that sexuality did not have any major impact on the health, but a few concern related to AIDS emerge in case of LGBT elderly. The gay and transgender can be visualized to be more prone to this concern.

With the narrative of Ramesh, I decipher that old age brings a plethora of illnesses along with declining capacities of sensory and motor organs. Ramesh had developed periods of 'horrendous' illness and this could be established from his own narratives, as he says,

'Well, right now I'm in situation that can medically be described best as reasonably critical, because in February of last year, I underwent a bypass. I'm diabetic. I've come through four months of absolutely horrendous illness called the diabetic foot.'

Evidently, Ramesh had been able to identify events that built up this stressful situation in old age, and it had no connection with his sexuality, rather, it was a link with lifestyle he had followed in his youth. Not caring about dietary needs, unplanned schedule and consumption of alcohol had been three themes that could be identified in the example he cites from his earlier life and it depicts the typical

urban lifestyle that people develop in adolescents. Certainly, not caring about the body in an adequate manner can be understood to be a reason that can contribute to the development of ailments and ill health in old age.

Ageing and Everyday Social Life

Ramesh has shown excellent resilience to loneliness and lack of companionship in old age. He has been able to weave a strong support system around him. Certainly ageing could not be seen as an impact on the social life of Ramesh due to certain set of events. Firstly, he is living with his partner and hence he had been able to develop an intimate relation. This would provide him with enough emotional security, although not much can be concluded on emotional life as this was not the locus of discussion. Secondly, his understanding about his sexuality with his sister had promoted his involvement in the social life, ceremonies and gatherings. Evidently, Ramesh mentions that his partner was also welcomed and it shows a good notion of acceptance. I would cite Ramesh's narrative at this point,

'My sibling, my sister, she knows it (about his sexuality) but we have swept it under the carpet. We are very Indian that way and yet the funny part of this is that she completely accepts my partner, so in family functions at her house, we both are invited as a unit. I have never faced any discrimination as such due to my sexuality. With my friends, I've been lucky. I've come out to people on a need-to-know basis.'

The third event is the presence of roles and responsibilities of work, that keeps him engaged in the everyday life, preventing loneliness and rolelessness. He mentions that he spends his schedule in academic and teaching related work. Fourthly, the loneliness of Ramesh is prevented largely from the peer group he built, comprising of largely single men, without families and hence the group somewhere had a commonality to relate with each-other. Also, Ramesh narrates a practice of visiting close friends every year, before the phases of his illness, which had been able to strengthen their support system and keep each other company with getting old.

One important thing that emerges from the interview is the fact that the old age of Ramesh depicted wisdom, knowledge and experience. He has been able to point at a number of vulnerabilities that the LGBT group is exposing itself to largely developing from his past experience. And hence, I understand old age as a stage when a person is able to connect and link their experiences to develop knowledge and wisdom.

I understand that old age poses a number of challenges, but Ramesh has shown good preparedness for it. With regards to finances, Ramesh has called himself to be 'heavily insured' and has been confident enough to support himself, if he had not to face multiple surgeries in a year. But in the nutshell, Ramesh can be understood to be aware of the health concerns in old age and hence he has used the most viable method of security.

Ramesh has care giving needs and during the phases of illnesses, he had the support of his partner. As his partner is a health professional, he had been cared by him and adding to this, the medical training of his partner has put him in a position to provide effective care during illness. This supports the theoretically established fact that LGBT people do have care giving responsibilities, along with a family.

Ramesh's life shows a positive resilience and preparedness to prevent the ills of old age. His sexuality cannot be seen as a factor that has limited his old age, as he had been able to prevent loneliness and develop companionship, which has fulfilled his emotional, health and care giving needs. I would move on to highlight some scope of interventions for the social work professional,

Scope for Human Service Professionals

In the social work profession, the major need is to develop a strong sense of cultural competency when working with LGBT population. The professionals need to be receptive to the sexuality concerns of the population and should develop mechanisms and ideas to address it. There is a need to develop understanding of psycho-social needs of the LGBT population and how these needs change during the old age.

Within the institutions like hospitals or old age homes, there is a need to imbibe the values of acceptance and cultural competency so

that people with alternative sexualities do not feel isolated or discriminated, specially in their old age, when they have major health concerns. Also, adding to this, we need to develop more policies through advocacy for the elderly LGBT and specifically transgenders, so that they can be prevented from undignified livelihood in the later stages of their life.

Limitations of study: Due to the qualitative nature of data and the size of sample generalisation is not possible. Secondly, the lived experience of one respondent is not enough to draw conclusions. This was done due to temporal limitations, but the author does not agree to the fact that one case can help in in-depth understanding of a phenomena. Certainly it does offer the scope to empirically understanding an issue.

* The author is a student of M.Phil (Sociology).

Notes

1. See History of Sexuality by Foucault, M (1990).
2. See Anthony Giddens, Theory of Structuration, 1984.
3. Mishra, A (2016) Embodiment of Alternative Sexualities: Contesting Heteronormativity and Destabilizing Binaries, University of Delhi (Unpublished Thesis).
4. Shaping of sexuality by socio-political environment, psyche and cultural relations.

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Annexure 1

Case Study

Ramesh (name changed), Age 57, Pune, MH, India. The following case is narrated by Ramesh itself.

'I am a gay man. I'm now 57 years old. I have lived with my partner now since sixteen years. I think I realized about my same-sex feelings when I was fifteen. I realized it by seeing the body of my classmates when we used to change for swimming lessons, boys' body was more interesting than the girls. I did not do any sexual activity until I was around 18. I did sexual activities for the first time with my classmate. He initiated it. To strengthen my idea of sexuality, I went to the college library and tried to read as much as I could. In those days unfortunately the material available on this was in the Encyclopedia only. Since they were ridiculously mainstream, there was not much information available until I went to the United States of America. I looked at the library there and found much better information there.

I accepted myself even before I went to USA. The visit, not the visit, the educational trip to USA was the direct result of the fact that I accepted myself to be gay and that I could not live in India anymore. It helped to reaffirm my sense of identity, it gave me a lot of confidence. Because I came out at the height of AIDS scare, and I guess that is the reason why I'm still alive. Because I got so pushed straight deep into the closet that I could come out the other side. Me and my partner met on the net, as all good partners should. We decided he could come and stay in my flat almost two months after we met, when I was 40. And we have been together since.

Well, one thing is that I live in the city of Pune and I see that successive waves of gay man have been duplicating the mistakes of all successive waves that have gone before them and somehow this puts me off the socializing gay scene so I have not socialized for more than 20 years. Well I think that with old age, the frequency of you going out to dinner with your friend decreases. But I don't think this in anyway hampers your relationship with the friend. Instead of meeting twice a day when you were twenty years old, you're more likely to speak on the phone and that might be everyday actually. I still look forward to going out because this is the time when I can get away from my usual routine of teaching and grading homework. So I look forward to my

visits with friend. They introduce me to new friends and because of that I am uncle or family friend to generations in some families actually. So its all very enjoyable and I find that very very nice.

Loneliness is all in the head. Just because you have not seen anybody physically or you're not out chasing anybody because you're gay and you're expected to do all that. Because I think it's a very unfortunate thing for young men in India today, because the argument seems like I'm a better gay man than you, because I have slept with 296 people and you've slept with two. This is all gonna take us down to the path of AIDS and nobody wants to read about it, nobody wants to think about it. So I have dissociated myself completely thirty years ago

In my family situation, my parents died when I was young. They died before they knew, I didn't have to tell them anything. My sibling, my sister, she knows it but we have swept it under the carpet. We are very Indian that way and yet the funny this is that she completely accepts my partner, so in family functions at her house, we both are invited as a unit. I have never faced any discrimination as such due to my sexuality. With my friends, I've been lucky. I've come out to people on a need-to-know basis. And if you as a friend are going to be able to accept my sexuality insofar as it affects you or has anything to do with your life, so I'm with sitting down and tell, look there's something you need to know about me and think about it and if you think it's going to make a difference to our friendship/relationship so tell me now, we don't have to see eachother again. And if you think it's not gonna make a difference, so there's no difference so there's nothing to talk about. I've had been in this conversation with more than 200 people till now and out of this, there have been five people who were honest enough to show that XXXX I am sorry, I'll not be able to stay in touch. That relationship was terminated right there with mutual consent. For a moment I thought we were friends, which turned out to be we are not, so for a second you get that anxiety and trauma of losing a friend, because we were friends.

Well, right now I'm in situation that can medically be described best as reasonably critical, because in February of last year, I underwent a bypass. I'm diabetic. I've come through four months of absolutely horrendous illness called the diabetic foot. My partner lucklily has medical training so he has been able to take care of me. I would say that I don't want to impute my ill-health or general lack of

health to the fact that I am gay, but it was the youth. Back in the 80s, when I was young, It was fashionable to not take care of yourself. And so lunch could be six vadapaos and in the night you go to celebrate your friend's birthday so you drink so much that you forget to eat. Yeah, all of that has very much impacted the body and since diseases do not discriminate between homosexuals and non-homosexuals. I'm carrying the impact of all those years and I'm paying the piper now.

I have enough people to take care of me. I think I am going to andropause because I become emotional and vulnerable at little things. My throat chokes up when I see a dog kicked on the street, for example. And I am going through this stage for the past six months and I'm hoping for it to die off so that I can get back to my usual self. If women can have menopause, they get vulnerable, agitated and emotional during their periods. I absolutely insist that we be allowed the same thing. You get a little vulnerable, I haven't gone gaga. I'm a little more emotional now as compared to a year ago. I have spoken about it to my partner and he understands it.

Well I'm very heavily insured. I have insurance for everything so finance is not a concern for me. If I have three important surgical procedures in one year, then maybe I'll be in trouble, but otherwise, finances for medical business are not a problem as such.

For support system, I've a group of old friends. We all are aging together and they all are around 40 to 50 years or more, so the support network exists and it is very strong. We all have very very deliberately taken care to nurture that because we all, most of us are single and two of us are in a relationship, but there is no traditional family structure to support us. And these are not all gay people. I suppose I'm the only gay person among the bachelors. Because we are all alone and we are well educated and thinking people, we have made our own arrangement so that their financial needs are looked out and for emotional support we all have each other.

We have a small network which unfortunately is not very active now but we have been active some 10 years ago. A group of friends, not necessarily we all are living in the same city, twice a year we would visit each other and traditional Indians we all are, we used to visit their home and all we have to pay is for the travel and the rest is cared by our friends.

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