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2005, Volume 19, No. 3, pp. 237-242

Is There a Male Menopause or Andropause ? A Review of Aging Male Reproductive System

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ABSTRACT

All systems of the human body are subjected to aging changes. But the rate of aging differs among the systems. The pattern of aging in reproductive system differs between the sexes. Unlike in female reproductive system where the changes are abrupt, there is a gradual change in reproductive systems of aging male. Loss of testosterone (male hormone) producing Leydig cells and inhibin producing Sertoli cells characterize the aging testes. The level of testosterone becomes low in aged males. The weights of seminal vesicle and epididymis decline. The prostate gland undergoes either senile atrophy or benign hypertrophy. Fertility of male declines but some fairly old individuals are known to father children. The sexual activities, libido, frequency of coitus etc. show a gradual decline with advancing age. Testosterone replacement therapy increases bone mass, muscle strength, and psychosexual and cognitive functions but may accompany adverse effects. By remaining physically and mentally fit with healthy life style, elderly men to a great extent can maintain the above cited functions without any hormone treatment.

Keywords: Male menopause, Male reproductive system, Aging, Hormone treatment, Healthy life style.

Menopause is the period in a woman's life where the ovaries cease to produce an egg cell every four weeks. The menstruation decline gradually or in its frequency with advancing age. At certain stage (45 to 55 years) it ceases abruptly and thus menopause occurs. The physiological and emotional changes following hormonal

imbalance in post-menopausal women include symptoms like palpitation, hot flushes, sweats, vaginal dryness, loss of libido and depression. Hormone replacement therapy to obviate the symptoms has gained repeated attention by scientists involved in the subject (Patnaik, 2003).

The question arises “Do men also have symptoms which may be termed as “male menopause” or “Andropause”. Unlike women who abruptly stop being fertile following menopause, men do not experience sudden change in fertility. Changes in male reproductive system occur gradually. Despite the senescent changes that occur in reproductive system of male, there is no single episode in his physiology which can be comparable to that of terminates at menopause in women. In women, gametogenesis starts in embryonic stage and terminates at menopause. On the other hand, in men spermatogenesis begins at puberty and continues throughout life. The sudden decrease in the estrogens in females is not matched by gradual decline in androgens in male. However, on the basis of a few cases of men suffering from abnormal hypofunction of the testes associated with loss of potency and libido, certain cardiovascular changes, chills and sudden perspiration, numbness and vertigo as well as instability, some scientists have suggested that such men have undergone “Andropause”.

Since abrupt cessation of reproductive capacity comparable to the menopause in women does not occur with aging in a majority of men, the use of the term : Andropause” may appear controversial. However the controversy notwithstanding the following description refers to aging changes in reproductive system of man with emphasis on salient features.

Reproductive System of Man

The male reproductive system includes external genitalia (Penis and Scrotum, a sac that contains on each side a testicle or testis). The accessory ducts are paired epididymis, paired ductus deferens (vas deferens), paired ejaculatory ducts and urethra. The accessory glands are paired seminal vesicles, prostate gland and paired Balbourethral (Cowper's) glands.

Penis is the male organ of copulation. The testes produce and store viable spermatozoa. They also synthesize and secrete androgenic

hormone, testosterone. The spermatozoa in the seminiferous tubular lumen are transferred to epididymis for further storage. The tail of the epididymis continues into vas deferens which transport spermatozoa into dilated ampulla. The seminal vesicle secrete fluid into ejaculatory ducts. Each ejaculatory duct commences at the union of seminal vesicle with the vas deferens and terminate at their union with prostatic urethra.

The prostatic gland releases its prostatic fluid into prostatic urethra and the Bulbourethral glands discharge their mucoid secretions into penile (anterior) urethra. At the moment of sexual climax during intercourse, the semen (spermatozoa with secretions of glands) is propelled out of the urethra by rhythmic contractions of bulbo and ischiocavernosus muscles.

Aging changes in male reproductive system

Aging changes in male reproductive system primarily occur in testes. Significant changes also occur in accessory ducts and glands. The changes are both anatomical and physiological. Among physiological changes, the most prominent change is in the level of hormones. The sexual behaviour is influenced by such changes. Manifestations of the influence are exhibited in mating behaviour such as sexdrive (libido), pattern of erection, frequency of mounts, intromission, ejaculations, intercopulatory and post copulatory intervals and intensity of organic experience. The other factors which determine sexual adequacy in elderly seems to be psychological, social changes related to aging (e.g. willing partner), diseases and chronic illness and medications (Former, 2002, Samson, 2000).

(a) Testes : The mature testes has three classes of cells : germinal, leydig and Sertoli. Germinal cells give rise to spermatozoa and the Leydig cells produce testosterone and other androgens. The Sertoli Cells support sperm differentiation, act as nurse cells for developing sperms and secrete inhibin which suppress secretion of gonadotropic hormone, ICSH (interstitial cell stimulating hormone).

The thickening of basement membrane and tubular wall causes ischaemia in seminiferous tubules. This leads to a gradual decline in spermatogenesis in aged men. This is followed by decrease in number and abnormality in shape and size of the spermatozoa. A gradual decline in the number and function of both Leydig and Sertoli cells has also been reported. The loss of Leydig cell leads to a decrease in

production of testosterone but at a much slower rate as compared to estrogen depletion in women (Vermeulen, 1976; Finch, 1990).

(b) Ducts and glands : Examination of epididymis, seminal vesicle and prostate gland indicate some loss of surface cells but they continue to produce the fluid that helps to carry sperms.

After 45-50 years, the prostate gland is either enlarged (benign hypertrophy) or reduced (senile atrophy), both the changes being progressive till death. Enlargement of prostate causes retention of urine due to distortion of urethra. Prostatectomy relieves the urinary obstruction. Prostate is also common site for carcinoma.

(c) Hormonal changes : The principal hormone of the testis, testosterone, a C₁₉ steroid, is synthesized in Leydig cells of the testis. Most of the secreted testosterone circulates in blood being bound to plasma proteins (sex steroid binding globulin and albumin). The free biologically active testosterone is about 1-2% of the total blood circulation. In target organs, testosterone is converted to a more potent dehydrotestosterone (Samson, 2000). Testosterone is known to promote synthesis of proteins in certain tissues especially skeletal muscle and is associated with retention of calcium, phosphorus, sodium, chloride and water.

Testosterone secretion decreases in old age. This is related to the number of Leydig cells and their decreased responsiveness to ICSH. The free form of circulating testosterone becomes low due to increase with age in sex hormone binding globulin.

In man, the daily cycle of testosterone production reaches two peaks i.e. one in evening and the other in the morning. In aged man even though there is a comparable evening peak, the morning peak level is only half the level seen in younger man (Orlock, 1998). By the age eighty the overall testosterone level may be 60% of what it was when he was thirty years old. Limited longitudinal data on small number of subjects confirm the decline of testosterone (Vermeulen, 1991). In most studies, the level of estrogens is usually not changed in elderly men (Gray *et al.*, 1991).

(d) Fertility : Fertility varies from man to man. Paternity has been documented upto 94 years of age. It appears that fairly old men can father children. But a gradually decrease in fertility with aging has been reported (Mineau and Trussell, 1982).

(e) Sexual activity : Age related decline in sexual activity and sexdrive (libido) occurs in otherwise fully functional men. The sexual responses become slower and less intense. However in a majority of men the decline in sexual function is also influenced by factors other than the level of testosterone. These are impaired penile vasculature, depression, chronic illness, diseases and medication.

It is normal for erections to occur less frequently than when younger and aging men have less ability to experience repeated ejaculation. The frequency of intercourse also declines with age. Penile erection is more difficult to achieve but once accomplished erection is maintained for a longer period of time than is the characteristic of youngman.

Injections of a variety of vasoactive substances and consumption of aphrodisiac and viagra (sildenafil) have been used to remove erectile dysfunctions and to raise sexual activity. A decline in sexual function caused by illness and medications can be regulated through expert medical advice. Sex is more likely if willing partner is available and if sexual activity has continued from middle age.

It is believed that a decline in sexual function is also partly related to the decline in testosterone level. More over changes in intrinsic cellular processes of aging which affect at tissues including the reproductive tissue has also a bearing on sexual function. In addition as stated earlier the influence of individual variations and disruptions linked to chronic illness, diseases and drugs can not be ruled out.

(f) Hormone replacement therapy : When androgen deficiency occurs due to primary testicular failure in situations like castration, disease and underdevelopment, the only effective treatment is administration of testosterone.

If the testes are normal but there is a deficiency of anterior pituitary gonadotropins, injections of FSH and LH (ICSH) stimulate development of Leydig cells, secretion of testosterone and spermatogenesis. In certain cases of hypogonadism, the hypothalamus may not release Gonadotropin Releasing hormone (GnRH). In such cases injections of GnRH can stimulate anterior pituitary to secrete gonadotropins and thus the normal testicular function is activated (Samson, 2000).

Testosterone replacement therapy increases bone mass, muscle strength, psychosexual and cognitive functions in elderly men with

hormone levels. But there are also potential adverse effects such as gain in weight, mild gynecomastia, aggravation of prostate disease, alterations in lipid and carbohydrate metabolism, induction of sleep apnea and increase in erythropoiesis and fibrinolysis. More studies on hormone replacement therapy in elderly men are necessary to assess the risk to benefit ratio (Swerdloff and Wang, 1993).

Conclusion

Aging is a natural process. Unlike the female reproductive system, the male reproductive system undergoes aging gradually. In advanced age, one must try to remain physically and mentally active by maintaining a healthy life-style. Aging by itself does not prevent a man from being able to have or enjoy sexual relationship.

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Antioxidant Effect of *Lactuca sativa* in the Testis and Epididymis of Aging Mice

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ABSTRACT

Oxygen free radicals are supposed hypothesized to play an important role in the aging process. These free radicals may be responsible for decrease in spermatogenesis with old age. *Lactuca sativa* is a rich source of quercetin about 38 mg/kg fresh weight. *Lactuca sativa* consist of quercetin glycosides as antioxidant, which is a free radical scavenger. In the present study, mitochondrial peroxidation and electrophoretic separation of Lactate dehydrogenase (LDH) was studied in induced aging mice. Other group of mice received D-galactose along with alcoholic *Lactuca sativa* extract. Adult male mice used as the controls, were provided with sterile water and food ad libitum. Mitochondrial peroxidation in testis and epididymis of D-galactose receiving mice was increased significantly ($p < 0.001$) as compared to the control group. However, those receiving D-galactose along with *Lactuca sativa* extract showed a significant decrease ($P < 0.001$). There were 6 bands of LDH enzyme in adult mice and one of them was LDH-X, marker enzyme of spermatogenesis. In D-galactose injected mice, LDH-X was missing whereas the same reappeared in D-galactose, *Lactuca* extract receiving group, which shows that *Lactuca sativa* is rich in antioxidant.

Keywords: Spermatogenesis, *Lactuca sativa*, Peroxidation, Epididymis.

Free radicals are short-lived reactive chemical intermediates, which contain unpaired electrons. These free radicals or reactive oxygen species such as superoxide anions (O_2^-), hydroxyl radicals (OH) and nitric oxide (NO) inactive enzymes and damage important cellular components causing tissue injury through covalent binding and lipid peroxidation (Geesin *et al.*, 1990). These free radicals are

also formed in the cells by biochemical processes and in certain diseased conditions as well as due to environmental toxicity, hormones and drugs (Witkop, 1985). Antioxidant enzymes like glutathione peroxidase (DeMarchena, *et al.*, 1974), catalase (Chance, 1979) and superoxide dismutase (Forman and Kennedy, 1976) scavenge these free radicals. When free radicals production enhances beyond normal, dietary components are not able to scavenge raised level of free radicals. The unscavenged free radicals exert their cytotoxic effects on the cell membrane causing peroxidation of membrane lipids (Tappel, 1980, Donato and Sohal, 1981, Schroeder, 1984). Free radical accumulation is maximum in brain cells, muscle cells, heart cells and testicular cells. The lipid composition of the plasma membrane of mammalian spermatozoa is markedly different from those of mammalian somatic cells. They have very high levels of phospholipids, sterols, saturated and polyunsaturated fatty acids. Sperm cells are therefore, highly susceptible to the damage induced by excessive reactive oxygen species (Braughler and Hall, 1989; Rosen *et al.*, 1993; Thorniley, *et al.*, 1994; Sanocka and Kurpysz, 2004). Thus increased production of toxic oxygen derivatives is considered to be a universal feature of stress condition. The major sources of generation of free radical in testis are derived from the spermatozoa, white blood cells in semen (Aitken and West, 1990).

Plants and other organisms have evolved a wide range of mechanisms to contend with the problem of free radical damage using a variety of antioxidant molecules and enzymes. Antioxidants stop or prevent free radical damage. An excellent source of antioxidants is flavonoids (Shukla, 1994). Flavonoids are group of polyphenolic compounds which are widely distributed throughout the plant kingdom (RajNarayan *et al.*, 2001). Among the flavonoids, flavonol glycosides are strong antioxidants (Hussain, *et al.*, 1987). They are present in large quantities in edible plants like potato, asparagus, carrot, onion, beet, cabbage, lettuce and parsley. Lettuce and parsley are the rich source of flavonol glycosides like quercetin, kaempferol and rutin which are strong antioxidants.

The name *Lactuca sativa* applies to the cultivated lettuce and been selectively bred from the wild weeds, *Lactuca serriola*, which grows around the Mediterranean and in the near East (Sauer, 1993).

Materials and Methods

Seven to eight months old male mice were divided into three groups of five animals each. They were supplied with mice feed and drinking water *ad libitum*. Aging was induced through injection of low dose of D-galactose subcutaneously to adult male mice.

Preparation of extract

Fresh leaves of *Lactuca sativa* were dried in sunlight, powdered and soaked in alcohol. By using vacuum evaporator, alcohol was evaporated and finally 0.4% alcoholic extract of *Lactuca sativa* was prepared in 5% D-galactose solution made in sterile water.

Study groups

Group-1 was control group receiving 0.5 ml sterile water/day subcutaneously for 20 days.

Group-II was injected with 5% D-galactose 0.5 ml / day for 20 days.

Group-III was injected subcutaneously with 2 mg extract of *Lactuca sativa* prepared in D-galactose solution for 20 days.

Mitochondrial peroxidation

Animals were sacrificed by cervical dislocation. Incision was made just above the scrotal sac to pull out testis and epididymis. Excised testis and epididymis were weighed and the concentration was made 2mg/ml. Tissues were thawed for about half an hour.

Tissue were homogenized in 0.25 M sucrose and 1 mM EDTA. Homogenate was subjected to cold centrifugation at 1000 rpm for 10 min. at 10°C. Pellets were discarded and supernatant was centrifuged further in cold centrifuge at 10,000 rpm for 10 min. Supernatant was discarded and pellets were mixed with 10% Triton X-100 prepared in distilled water and centrifuged at 10,000 rpm for 10 min. at 10°C. Supernatant once again discarded and pellets were thoroughly mixed with 1 ml reaction mixture and used as sample.

The additions were made as follows :-

Tubes were divided into 2 groups. Group A referred as the control and group B as sample. In control group tubes, 2.0 ml distilled water, 1 ml 20% TCA and 2 ml 0.67% TBA was added. In sample group tubes, 1.8 ml distilled water, 1 ml 20% TCA and 2 ml 0.67% TBA was

added. Tubes were further placed in boiling water bath for 10 min, cooled and read at 532 nm by using spectronic 20.

Electrophoretic separation of LDH

Polyacrylamide gel electrophoresis (PAGE) was performed in cylindrical glass tubes (Davis, 1964). The glass tubes used for gel preparation were having 5 mm dimension and 8 cm in length. Each sample was run on a separate rod. 5% PAG is prepared by using acrylamide (4.75 gm), Bis acrylamide (0.25 gm), TEMED (N, N, N', N', tetramethyl ethylene diamine 0.05 gm) and Ammonium persulphate (0.01 gm) in 100 ml separation gel buffer. Separation gel buffer (pH 7.5) was prepared by using Tris 0.856 Gms and 1 M HCl dissolved in 100 ml doubly distilled water. Electrode chamber buffer was also prepared. At anode 0.26 M Tris buffer pH (9.1) and at cathode Barbitol buffer (pH 8.6) was poured.

Preparation of sample

Homogenization of testis was carried using refrigerated glass mortar and pestle. Tissues were crushed at the bottom of mortar for instantaneous freezing and gradual thawing with cold distilled water. The concentration was made 25 mg/ml. Homogenates were centrifuged at 10°C at 5000 rpm for 10 min. The supernatant was used for electrophoresis. Sample dye was prepared by addition of 1 ml supernatant + 50 mg Sucrose + 0.3 ml glycerol + 0.001% Bromophenol blue. 20 µl sample dye was loaded for a single gel rod with the help of micro syringe. The electrophoresis unit was placed in refrigerator. Voltage was kept constant at 150 volt and 3 mA current per rod was employed. After 30 to 40 min. dye front reached the tip leaving 5 mm distance electrophoresis was stopped. Gels were removed from rods and stained. Gel staining mixture prepared by using substrate buffer (1 ml 60%) Sodium lactate diluted to 10 ml M/15 phosphate buffer pH 7.5). Working substrate solution was prepared using 1 ml substrate buffer pH 7.5 1/15 M and 10 mg NAD and phenazine methosulphate 1 mg/ml in water. The gels were transferred in container containing working substrate solution or called as Gel Staining mixture and incubated at 37°C until bands were resolved. They took about 30 min. and then gels were washed with 10% acetic acid and stored in 7% acetic acid.

Results

Thiobarbituric acid reacting product in the form of MDA is shown in Table No. 1 to elaborate peroxidation in mitochondrial fraction. There was a significant increase in TBA reacting level in testis of D-galactose receiving mice as compared to the control ($p<0.001$). But MDA level was not increased in *Lactuca sativa* extract and D-galactose receiving mice compared to normal. In epididymis, TBA reacting level was increased in D-galactose injected mice as compared to the control group. MDA level was highly decreased in *Lactuca sativa* D-galactose administered group as compared to D-galactose induced aged mice as well as control once. The decrease was highly significant ($p<0.001$) both in testis as well in epididymis.

Table 1 : Effect of *Lactuca sativa* on TBA reacting product in the form of MDA (n mol MDA/mg tissue) during aging

Organs	Normal	D-galactose	D-gal+ <i>Lactuca</i>	Statistical Significance	
	1	2	3	1:2	2:3
Testis	3.4584 ± 0.0047	6.23338 ± 0.0951	1.2182 ± 0.1033	$t=26.070$ $p<0.001$	$t=79.939$ $p<0.001$
	4	5	6	4:5	5:6
Epididymis	3.3364 ± 0.1897	5.1534 ± 0.0391	1.2162 ± 0.0963	$t=20.657$ $p<0.001$	$t=80.531$ $p<0.001$

Table 2 : Effect of *Lactuca sativa* on weight of testis and epididymis and sperm count/epididymis ($\times 10^6$)

Organs	Normal	D-galactose	D-gal+ <i>Lactuca</i>	Statistical Significance		
	1	2	3	1:2	4:5	7:9
Weight of Testis	236.6 ± 2.408	225 ± 6.3245	284 ± 0.4832	3.8326 $p<0.001$	7.5843 $p<0.001$	7.7997 $p<0.001$
	4	5	6	4:5		5:6
Weight of Epididymis	54 ± 0.1897	41.4 ± 0.0391	54.48 ± 0.0963	21.087 $p<0.001$	15.975 $p<0.001$	3.9748 $p<0.001$
	7	8	9			
Weight of Epididymis	3.137 ± 0.094	6.872 ± 0.0370	6.9346 ± 0.0776			

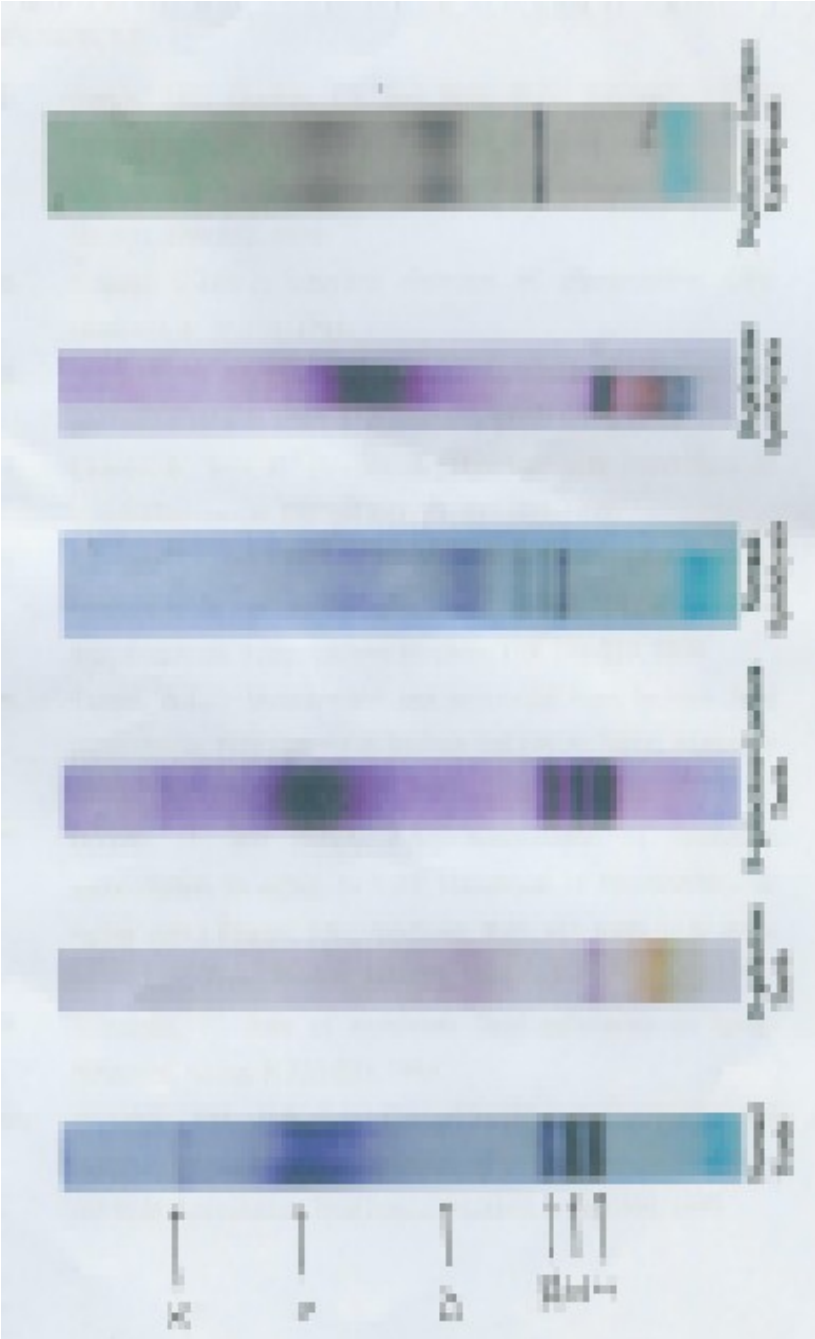


Fig. 1 : Electrophoretic separation of Laetate dehydrogen

Fig. 1 shows electrophoretic separation of the Lactate dehydrogenase in testis of normal, D-galactose and *Lactuca sativa* extract along with D-galactose administered mice. In normal testis, LDH was separated into 6 clear bands i.e. I, II, III, IV, V and LDH-X. The LDH-X band was observed at the top of gel. LDH-X is most abundant iso-enzyme in spermatogenic cells. It serves as marker of germinal cell.

In D-galactose injected mice, there was tremendous change in separation of LDH enzyme, where band I and V were clearly separated but LDH-X completely disappeared. The intensity of other bands i.e. II, III, IV was highly reduced. But in *Lactuca sativa* extract along with D-galactose receiving mice, Band II, III and LDH-X reappeared. Only band IV was showing low intensity.

Epididymis normal mice there indicated clear separation of all bands. Band II and III were showing low intensity, IV was intensely stained as compared to normal testis. In D-galactose group, Bands II, III and LDH-X totally disappeared whereas they reappeared in *Lactuca sativa* along with D-galactose administered mice.

Discussion

Aging seriously affects mammalian male reproductive organs, the testis and epididymis. Spermatogenesis and steroidogenesis decrease with old age (Levy *et al.*, 1999, Zirkin and Chen 2000) and it has been shown that, apoptosis increases with age producing accelerated sperm cell loss (Wang, 1999, Kimura, 2003). These changes were related to increase in oxidative stress in the tissue (Samanta, 1999). ROS are regularly formed during the process of cellular respiration as well as due to environmental toxicity. However, the production is kept constant at physiologically low levels by intracellular free radical scavenger (Southorn and Powis, 1988). Aitken and West (1990) and Kessopoulou (1992) and his co-workers have demonstrated that the major sources of ROS in semen were derived from the spermatozoa and infiltrating leucocytes. The lipid composition of the sperm membrane has been shown to extend a significant effect upon the functional quality of spermatozoa. In D-galactose fed mice, there is increase in mitochondrial peroxidation. Mitochondria peroxidation through free radicals is associated with membrane polyunsaturated fatty acid (PUFA), which is main component of sperm membrane. Sperm susceptibility to oxidative stress is vital as it affects various

characteristics of sperm function (Misra *et al.*, 2003). ROS production in testis has been associated with loss of sperm motility, decreased capacity of sperm - ovum fusion and less fertility. There is presumption that most prolific source of ROS in testis is NADPH oxidase located in leucocytes. Spermatozoa which produce superoxide is further converted into H_2O_2 , has been recognized as the most toxic oxidizing species to spermatozoa owing to high content of polyunsaturated fatty acid, in their plasma membrane (Alvarez, 1987). In D-galactose fed mice, there was increase in free radicals and mitochondrial peroxidation as measured by MDA in testis and epididymis. Like testis, sperm of epididymis also showed oxidative stress damage (Viger and Robaire, 1995).

In present observation, it has been observed that, there is an increase in mitochondrial peroxidation in galactose fed mice both in testis and epididymis of young adult mice. The decrease in spermatogenesis during aging is reported by Lee and Park, (1997), Zarkin and Chen (2003). This is confirmed by sperm count in epididymis and also by the presence of LDH isoenzyme. LDH-X isoenzyme is marker enzyme of testis and engaged in active spermatogenesis (Kaur and Bansal, 2004). Particularly pachytene spermatocyte, spermatids and mature spermatozoa. Electrophoretic spermatogenesis of LDH does not reflect testicular germ cell loss, but LDH-X isozyme band disappeared. Hence, there is positive correlation in LDH-X band and sperm count and therefore spermatogenesis. The free radicals formed in the cells are scavenged by antioxidant enzymes (Alvarez, 1987, Jeulin, 1989, Kobayashi, 1991). Besides these enzymic systems, other compounds with antioxidant properties have been found in mammalian semen. There is decrease in sperm count, disappearance of LDH-X band, increase in lipid peroxidation indicates that in galactose treated mice balance between free radical formation and scavenging is disturbed. This shows that when there is induction of free radical formation due to toxicity or non-cellular reasons like of drug hormone or diseased conditions like diabetes or Alzheimer disease, testicular spermatogenesis is affected. Feeding of *Lactuca sativa* in this situation may protect testicular structure and function. Flavonoids play an important role in the protection of tissues against free radicals. Lettuce (*Lactuca sativa*) contains large quantity of flavonol glycosides which are strong antioxidants.

D-galactose fed mice showed loss of sperm count whose mitochondrial peroxidation level in testis and epididymis increased due to D-galactose feeding and did not increased in D-galactose fed mice receiving *Lactuca sativa*, but decreased significantly in this group of mice. LDH-X which is the marker of active spermatogenesis disappeared from the electrophoretic profile in D-galactose fed mice but not in D-galactose treated *Lactuca sativa* receiving mice. The present study demonstrated that reduction in spermatogenesis in aged animals could be reversed by giving flavonoid antioxidant. The plant like lettuce may be useful in premature spermatogenesis due to several reasons like toxicity, alcoholic consumption or diseases like diabetes or Alzheimer.

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Physiological Changes and Problems Experienced by Women in Menopausal Period

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ABSTRACT

The common menopausal symptoms have profound effects on millions of women. In this regard an attempt is made to study the physiological changes and problems experienced by women in menopausal period. One hundred and fifty sample women (75 each from middle and low SES) in the age group of 50-55 years who experienced menopause were selected from Parbhani town of Maharashtra. The women were personally interviewed to elicit the information pertaining to the study. Irrespective of the socio-economic status of the sample women, 50-90 per cent women reported to have experienced irregular menstruation, problems related to vaginal condition, excretion, hot flushes, body weight gain, skin and bone problems. Significantly more number of low SES middle aged women experienced more physical changes and their associated problems as compared to their counterparts in middle SES group which might be due to their poor diet and reproductive health care and difference in their work pattern.

Keywords: Menarche, Menstruation, Menopause, Hot flushes

Middle age is one of the most important period in women's life span. Many psychological and physiological changes take place among them due to forthcoming menopause. Menopause is defined as the time when a women's monthly periods (menstruation) permanently ceases, when ovaries gradually stop producing the female sex hormones - estrogen and progesterone. Usually, there is a period of about 2 years before menopause during which menstruation becomes irregular and a number of physical and psychological symptoms

appear. The final menstruation occurs in most of the women between the age of 48-52 years. Although menopause is a biological event, the experiences and symptoms of menopause vary both within and across culture.

However, the physiological and psychological changes and problems associated with menopause do not affect all women with the same intensity. Menopause period requires care and attention of family members. Besides it, women must undergo frequent medical check up and must take necessary medical care. Mickinlay and Jeffersy (1974), Wopod (1979) and Lippert (1997) studied 638, 948 and 541 women, respectively and found that majority of them complained of hot flushes and night sweat. However, Avis *et al.* (2002) reported that physiological and hormonal changes associated with menopause did not affect all women.

Method

A stratified random sample of 150 women (75 each from middle and low SES) in the age group of 50-55 years, who experienced menopause were selected from Parbhani town. The structured cum open ended personal interview schedule was used to elicit information from the women pertaining to the study and verifying their medical reports. Socio-economic status scale for urban was used to assess sample women's SES.

Results and Discussin

The personal background information of the sample women and their families is depicted in Table-1. A majority of the women in middle SES group were in the age range of 53-55 years and the remaining were in the age range of 50-52 years while it was vice versa in low SES group. Majority of the women in middle and low SES groups were having spouse while a very small percentage of them were not having spouse due either to divorce or death. Fifty four per cent sample women in middle SES group hailed from middle size families followed by small per cent of the women in low SES group hailing from middle size families followed by small size (37.33%) and large size (12%) families.

Table 1 : Background information of the sample women

Variables	Socio-economic status (in %) (150)	
	Middle SES (75)	Low SES (75)
Age (Years)		
50 - 52	33.33 (25)	61.33 (46)
53-55	66.67 (50)	38.67 (29)
Marital status		
Having spouse	93.33 (70)	68.00 (51)
No expired spouse	4.00 (3)	29.33 (22)
No divorce spouse	2.66 (2)	2.66 (2)
Type of family		
Nuclear	44.00 (33)	36.0 (27)
Joint	50.66 (38)	60.00 (45)
Extended	5.33 (4)	4.00 (3)
Size of family		
Small (1-4)	41.33 (21)	37.33 (28)
Middle (4-8)	54.66 (51)	50.66 (38)
Large (above 8)	4.00 (3)	12.00 (9)

Figures in parenthesis indicated frequencies

Table-2 details about the sample women's age at menarche and their reproductive health history. Irrespective of socio-economic status majority of the sample women (61-70%) attained menarche in the age range between 12-14 years and the remaining 22-38 per cent of them attained it in the age range between 14-16 years. However, significantly more number of women from middle SES group attained it at right time (12-14 years) as compared to their counterparts. This might be due to the better health care practices adopted by them. About 60 per cent of the women in middle SES group reported that they experienced abdominal pain and backache followed by nausea (37.33%) scrams (26.66%) and headache at menarche. On the other hand, majority of the women in low SES group experienced headache (88%) followed by nausea (58.66%), scrams (56%), abdominal pain

(41.66%) and backache (36%) at menarche. Socio-economic status found to have positive influence on the age at menarche. A higher percentage of the women in low SES group experienced more discomforts at menarche as compared to their counterparts. Majority of the women (98.67%) in low SES group got married at very early age i.e. in the age range between 11 and 15 years while a meagre per cent got married in the age range between 15 and 20 years. While half of the women in middle SES group (49.33%) got married in the age range between 11 and 15 years followed by 15 and 20 years (42.66%) and 22 and 25 years (8%). Highly significant differences were recorded in them with regard to the age at marriage. A very small percentage of the women in low SES group were found to have 4-6 pregnancies, whereas a meager per cent of them (1-5%) stated to have 7-9 pregnancies. Broadly 2-4 per cent of the women in both groups never conceived in their reproductive life. About 61.00 per cent middle socio-economic status sample women reported to have 1-3 deliveries and the remaining reported to have 3-6 deliveries. On the other hand about 48.66 per cent low socio-economic status women stated to have 3-6 deliveries followed by 1-3 (42.66%) and 6-9 deliveries (5.55%). The results reveal that, irrespective of their socio-economic status majority of them (98-100%) had normal deliveries and only 1.36 per cent had instrumental deliveries. The study indicated that as compared to the middle SES group, a higher percentage of the low SES group (44.33%) reported to have 1-2 abortions. While 17.33 per cent of the women from low SES group stated to have 3-4 abortions. A higher percentage of low SES group was found to have more pregnancies, more deliveries and also more abortions as compared to their counterparts. It was recorded that irrespective of their socio-economic status, majority of the women (90-93%) experienced natural menopause, while it was induced menopause in 8-9 per cent. Fifty four per cent of the middle SES sample women underwent menopause in the age range between 45 and 50 years as compared to about half of the low SES women undergoing menopause in the same age group. There was significant differences in the age groups and types of menopause of the women in both the SES groups.

Table 2 : Showing age at menarche and reproductive health history

Reproductive health status	Socio-economic status (in %)	Z values
	150	

	Middle SES (75)	Low SES (75)	
Onset of menarche (Age in years)			
12–14	7.33 (58)	61.33 (46)	2.16*
14–16	22.66 (17)	38.66 (26)	2.16*
Discomforts experienced at menarche			
Headache	6.66 (5)	88.00 (66)	17.19**
Abdominal pain	60.00 (45)	41.66 (31)	2.33*
Backache	60.00 (45)	36.00 (27)	3.03**
Nausea	37.33 (28)	58.66 (44)	2.68**
Scrams	26.66 (20)	56.00 (42)	3.82*
Age at marriage (years)			
11–15	49.33 (37)	96.67 (74)	9.04**
15–20	42.66 (32)	13.. (1)	7.05**
20–25	8.00 (6)	—	—
Number of pregnancies			
Nil	2.66 (2)	4.00 (3)	0.46 ^{NS}
1–3	56.00 (42)	40.00 (30)	1.99*
4–6	40.00 (30)	50.67 (38)	1.32 ^{NS}
7–9	1.33 (1)	5.33 (4)	1.37 ^{NS}
Number of deliveries	n = 73	n = 72	
1–3	61.33 (46)	42.66 (32)	2.33*
4–6	36.33 (27)	48.66 (36)	1.50 ^{NS}
6–9	—	5.55 (4)	—
Types of delivery			
Normal	98.63 (72)	100 (72)	1.01 ^{NS}
Instrumental	1.36 (1)	—	—
Number of abortions			
Recalled	33.33 (25)	44.33 (31)	2.89*
1–2	—	17.33 (13)	—
3–4	22.66 (17)	12.00 (9)	3.97**
Could not recall	44.00 (33)	29.33 (22)	1.89 ^{NS}
Type of menopause			
Natural	92.00 (69)	90.67 (68)	0.29 ^{NS}
Induced (Hysterectomy)	8.00 (6)	9.33 (7)	0.56 ^{NS}
On set menopause (years)			
40–45	46.66 (35)	50.66 (38)	0.49 ^{NS}
45–50	54.33 (40)	49.33 (37)	0.49 ^{NS}

Figures in parenthesis indicate frequencies

** - P < 0.012 Level

* - P < 0.05 Level

NS - Non Significant

Table-3 manifests the physiological changes and experienced problems of selected sample women during menopausal period. The results indicate that irrespective of the socio-economic status of the women 75-92 per cent women reported to have experienced irregular menstruation i.e. either too early or too late (33-45%). Besides, majority women (55-59%) experienced profuse menstrual bleeding, while 43-45 per cent had scanty menstrual bleeding during menopause period. In both the SES groups, no significant differences were recorded with regard to their menstruation. About vaginal condition, 67 per cent of the middle SES group reported white vaginal discharge followed by the vaginal dryness (60%), itching sensation (40%) and burning (30.67%). The corresponding percentages of the low SES group were 80 or more. Irrespective of socio-economic status 10-32 per cent of the sample women encountered these problems often. However, as compared to the middle SES group, significantly more number of women in low SES group reported to have problems associated with vagina. This could be due to the poor genital hygiene maintained by them. With regard to the bladder control, 32 per cent of the women from middle SES group and 64 per cent from low SES group reported to have experienced subnormal bladder control. Significantly, a higher percentage of women of low SES group reported, poor bladder control as compared to their counterparts. Irrespective of the socio-economic status of women, majority of the sample women often experienced perspiration followed by hot flashes while undergoing menopause. However, significantly a higher percentage of the women from low SES group experienced general weakness as compared to their counterparts which might be due to their more toiling, poor diet and health care practices. Irrespective of the socio-economic status, overall no significant differences were also recorded with regard to the gain in their body weight. On the other hand about 42-85 per cent women from the middle SES group reported that they lost 1-5 kg body weight while undergoing menopause followed by 5-10 kg (37.14%) and 10-15 kg (20%). The corresponding percentages of the sample women of low SES group were 37.50, 50 and 12.50. The results indicate that significantly, a higher percentage of the women in middle SES group accumulated fat specially on their face and hips as compared to their counterparts in low SES group. It was recorded that irrespective of their socio-economic status, majority (68-84%) of the women in both the SES groups sometimes found to

have suffered from constipation while 16-31 per cent of them suffered from piles during menopausal period. Sixty four percent of the women in low SES group and lower percentage (20%) of the middle SES group women sometimes experienced bad odour of body during menopausal period. Significantly, a higher percentage of the women from low SES group experienced bad odour of body. It might be due to the poor personal hygiene practices as compared to their counterparts in the middle SES group. Eighty two per cent of the women from the low SES group and 42.67 per cent women from the middle SES group experienced nausea during menopausal period. However, a higher percentage of them experienced it sometimes. Significantly a higher percentage of the women in low SES group reported it as compared to their counterparts in the middle SES groups. Forty five to fifty seven per cent women from the low SES group reported bleeding gums and yellowed teeth. The corresponding percentages of the middle SES group were 34 and 4. Ninety eight per cent women from low SES group reported that their skin became dry and caused sensation followed by loose, wrinkled skin and patchy skin (93.33%). A meager percentage (2-4%) of the women from both the SES groups reported skin infection. Fifty three of the women in middle SES group found to have pendulous breast, while 46.66 per cent of them found to have flat breast, whereas the percentages were other way among the women in low SES group. Significantly a higher percentage of the middle SES women had sparse hair on their head as compared to their counterparts in the low SES group. About 60 per cent of the women from low SES group and 53 per cent of women in middle SES group reported to have suffered from osteoporosis. Irrespective of the socio-economic status, majority (80-96%) of the women experienced body tremors. However majority of the women from middle SES group found to have suffered from it some times. While the results recorded to be vice versa in case of low SES group women. Significantly, a higher percentage of the women from low SES group experienced body tremors as compared to their counterparts in the middle SES group. Some of these findings are in line with the results reported by Mickinlay and Jefferysy (1974). Wood (1979), Siegal (1990), Lippert (1997) Starpoli (1998) and Hardy and Kuh (2000).

Table 3 : Physiological Changes and problems reported during menopausal period

Encountered physiological changes & problems	Irrespective of frequency		Z Value	Socio-economic status (in %) With respect to frequency			
				Middle SES (75)	Low SES (75)		
	Middle	Low SES		Often	Sometimes	Often	Sometimes
Menstruation							
Irregular	92.00 (59)	74.66 (56)	0.9 ^{NS}	76.00 (57)	2.66 (2)	74.66 (56)	—
Early	54.23 (32)	66.66 (56)	0.75 ^{NS}	41.33 (31)	1.33 (1)	49.33 (37)	—
Late							
Menstrual bleeding	n=58	n=67					
Profused	56.89 (33)	55.22 (37)	0.11 ^{NS}	58.89 (33)	—	55.22 (37)	—
Scanty	43.10 (25)	44.76 (30)	0.15 ^{NS}	43.10 (25)	—	44.76 (30)	—
Vaginal condition							
Dry	60.00 (45)	85.33 (64)	2.00*	10.67 (8)	49.33 (37)	13.33 (10)	72.00 (54)
Itching	40.00 (30)	78.67 (59)	3.60**	12.00 (21)	28.00 (21)	12.00 (9)	66.67 (50)
Burning	30.67 (23)	85.33 (64)	5.24**	10.67 (8)	20.00 (15)	25.33 (19)	60.00 (45)
White discharge	66.66 (5)	81.33 (61)	0.86**	28.00 (21)	38.66 (29)	32.00 (24)	49.33 (37)
Bladder control							
Subnormal	32.00 (24)	64.00 (24)	4.14**	30.67 (27)	20.00 (15)	50.67 (28)	18.65 (14)
Hot flushes	56.00 (42)	53.67 (52)	1.65 ^{NS}	36.00 (27)	20.00 (15)	50.67 (28)	18.66 (14)
Palpitation	58.67 (44)	70.67 (53)	1.55 ^{NS}	32.00 (24)	20.67 (20)	48.00 (36)	22.67 (17)
General weakness	36.00 (27)	54.66 (41)	2.34 ^{NS}	17.33 (13)	18.66 (14)	36.00 (27)	18.66 (14)
Changes in body weight							
Loss in kg	n=35	n=40					
1 - 5	42.85 (15)	37.50 (15)	0.4 ^{NS}	42.85 (15)	—	37.50 (15)	—
5 -10	37.14 (13)	50.00 (20)	1.13 ^{NS}	37.14 (13)	—	50.00 (20)	—
10 - 15	20.00 (7)	12.50 (5)	0.88 ^{NS}	20.00 (7)	—	12.50 (5)	—
Gain (in kg)							
1 - 5	50.00 (20)	22.86 (8)	2.55*	50.00 (20)	—	22.86 (8)	—
5 -10	32.50 (13)	54.28 (19)	1.94 ^{NS}	32.50 (13)	—	54.25 (19)	—
10 - 15	17.05 (7)	22.86 (8)	0.58 ^{NS}	70.50 (7)	—	22.86 (8)	—

Fat accumulation							
Face	34.67 (26)	16.00 (12)	2.69**	34.67 (26)	–	16.00 (12)	–
Abdomen	53.33 (40)	42.67 (32)	0.97 ^{NS}	53.33 (40)	–	42.67 (32)	–
Hips	54.66 (41)	36.00 (27)	2.34*	54.66 (41)	–	36.00 (27)	–
Legs	42.66 (32)	29.33 (22)	1.72 ^{NS}	42.66 (32)	–	29.33 (22)	–
Excretion Bowel							
n=38		n=56					
Piles	31.15 (12)	16.07 (9)	2.14*	2.63 (1)	28.94 (11)	1.78 (1)	14.58 (8)
Constipation	66.42 (26)	83.92 (47)	0.69 ^{NS}	2.63 (1)	65.78 (25)	1.78 (1)	82.14 (46)
Bad body odour							
Nausea	20.00 (15)	64.00 (48)	6.10**	5.33 (4)	14.66 (11)	25.33 (19)	68.66 (39)
	42.67 (32)	82.67 (62)	5.56**	4.00 (3)	38.67 (29)	10.67 (8)	72.00 (54)
Dental							
Bleeding in gums	34.66 (36)	45.33 (54)	1.33 ^{NS}	9.33 (7)	25.33 (19)	17.33 (13)	28.00 (21)
Yellowed teeth	4.00 (3)	57.33 (43)	8.68**	4.00 (3)	–	57.33 (43)	–
Skin							
Dry and itching	86.67 (65)	98.66 (74)	2.90**	36.00 (27)	50.67 (38)	28.00 (21)	70.67 (53)
Loss and wrinkled	78.67 (59)	93.33 (70)	0.73 ^{NS}	78.67 (59)	–	93.3 (7))	–
Patches	52.00 (39)	86.67 (65)	4.97**	44.00 (33)	8.00 (6)	60.00 (45)	26.67 (20)
Infection	4.00 (3)	2.67 (2)	0.46 ^{NS}	4.00 (3)	–	2.67 (2)	–
Breast							
Flat	46.66 (35)	53.33 (4)	0.58 ^{NS}	46.66 (35)	–	53.33 (40)	–
Pendulous	53.33 (40)	46.66 (35)	0.58 ^{NS}	53.33 (40)	–	46.66 (35)	–
Sparsenes in hair							
Legs	97.33 (73)	98.67 (74)	0.58 ^{NS}	97.33 (73)	–	98.67 (74)	–
Auxillary	96.00 (72)	98.67 (74)	1.02 ^{NS}	96.00 (72)	–	98.67 (74)	–
Pubic	94.67 (71)	10.00 (75)	0.23 ^{NS}	94.67 (71)	–	100.00 (75)	–
Head	89.33 (67)	52.00 (39)	5.51**	89.33 (67)	–	52.00 (39)	–
Osteoporosis							
	53.33 (40)	60.00 (45)	0.83 ^{NS}	53.33 (40)	–	60.00 (45)	–
Body Tremors							
	80.00 (60)	96.00 (72)	3.11**	31.66 (19)	68.33 (41)	66.67 (50)	29.33 (22)

Figures in parenthesis indicate frequencies : ** P <0.01 Level

* P>0.05 Level

NS - Non Significant

Conclusion

From the data collected, it could be concluded that, socio-economic status of women inparts a significant influence on the physiological changes and problems experienced by women in menopausal period. Majority of the women undergo a lot of physical changes during menopause period and also suffer from problems assocaited with them.

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Effect of Ashwagandha (*Withania somnifera*) Root Powder on Lipid Peroxidation in *Drosophila melanogaster*

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ABSTRACT

Ashwagandha (Withania somnifera) has been used in the treatment of various diseases due to its anti-inflammatory, immunomodulatory, antistress, mind boosting and rejuvenating and antioxidant properties. In the present investigation, the anti-lipid peroxidative activity of Ashwagandha root powder was studied in various age groups of male and female Drosophila melanogaster. In Ashwagandha treated group, highly significant decrease in lipid peroxidation was observed as compared to the control group, suggesting antioxidant property of Ashwagandha.

Keywords: Ashwagandha, Lipid peroxidation, Antioxidant.

Ashwagandha (*Withania somnifera*), a member of the family Solanaceae, is a small evergreen shrub, used as a 'rasayana' in Indian system of medicine for more than 2000 years. It is used in the treatment of various diseases such as leprosy, nervous disorders, intestinal disorders, venereal diseases, rheumatism and as a tonic for all kinds of weakness and also to promote vigor and vitality. Numerous studies over the past decades indicate that it has anti-inflammatory, antitumor, antistress, antioxidant, mind boosting and rejuvenating properties (Bone 1996; Mishra *et al.*, 2000).

Drosophila melanogaster has been used extensively throughout the world for the study of gene expression in early development, mutations, behavioural mutants due to its simplicity in culturing methods, short life cycle, ease of handling and its extensively known genome. Therefore, in the present investigation, we have used this model to study the effect of Ashwagandha root powder on lipid peroxidation and thereby oxidative stress, since lipid peroxidation is the hallmark of oxidative stress.

Material and Methods

Wild strain of *Drosophila melanogaster* was obtained from Department of Zoology, Banaras Hindu University, Varanasi and cultured on maize medium at 21°C in B.O.D. incubator. The flies were grouped into two :

Group I as control group. These flies were grown on maize medium powder 9 gm, crude sugar 8 gm, agar-agar 3 gm, sodium benzoate 0.66 gm, propionic acid 0.66 ml in 200 ml drinking water and 3 gm active yeast).

Group II as experimental group. These flies were grown on Ashwagandha containing maize medium (200 ml maize medium containing 5 gm of Ashwagandha root powder). 3 gm of agar-agar was put in 100 ml of drinking water and kept for boiling, with continuous stirring. Maize powder (Ashwagandha root powder for experimental group) and crude sugar were mixed in another 100 ml drinking water and made lukewarm. As soon as the agar-agar gets dissolved in water the mixture of maize powder, crude sugar and water was added to it and again kept for boiling with continuous stirring. Once the medium was prepared the antifungal agents sodium benzoate and propionic acid were added to it. This medium was then added into culture vials upto the level of approximately one inch from the bottom. After cooling and solidification of the medium, moisture deposited on the inner surface of the culture vials was wiped off to prevent slipping of the flies. Yeast granules were added to the medium just before transferring the flies.

Lipid peroxidation was measured in newly emerged, 14 days old and 21 days old population of male and female flies separately in the

form of TTBARS by the method of Wills (1966). The flies were killed by ether anesthesia and homogenized at the concentration of 2 mg/ml in a reaction mixture containing 75 mM potassium phosphate buffer (pH 7.04) containing 1 mM ascorbic acid and 1 mM FeCl₃. The lipid peroxidation was measured by taking 0.2 ml homogenate and 1.8 ml distilled water and treating with 2 ml 0.67% thiobarbituric acid and 1 ml 20% trichloroacetic acid. The contents were boiled at 100°C for 10 min. in a boiling water bath. The pink colour formed was measured at 532 nm after centrifugation. The reaction system devoid of homogenate was treated as blank. The level of TBARS was expressed as nM of MDA (malondialdehyde)/ mg tissue. Lipid peroxidation was calculated by the following formula.

$$\text{Lipid peroxidation / mg tissue} = \frac{\text{O.D. of sample}}{0.156 \times 0.4}$$

Where,

0.156 = the absorbance for 1nM solution of malondialdehyde in a 1 cm thick cell at 532 nm.

0.4 = amount of tissue taken in mg present in 0.2 ml of sample.

Result obtained are presented as mean $\pm$ SD for six events of estimation. Statistical significance of difference in means was analyzed using 'Student t' test.

Results and Discussion

There was steady increase in lipid peroxidation in the form of MDA in control and experimental group during aging. As compared to control group. Ashwagandha treated group showed highly significant decrease in lipid peroxidation in all the age groups studied. The degree of lipid peroxidation was higher in females than males. The values of MDA in male and female flies are mentioned in represented graphically, (See Fig.-1 and Fig.-2).

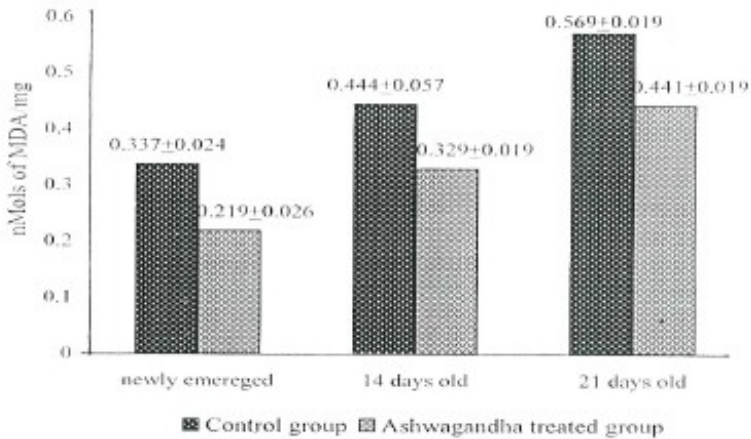


Fig.-1 : Effect of Ashwagandha root powder on lipid peroxidation in the form of nMols of MDA/mg tissue in male *Drosophila melanogaster*

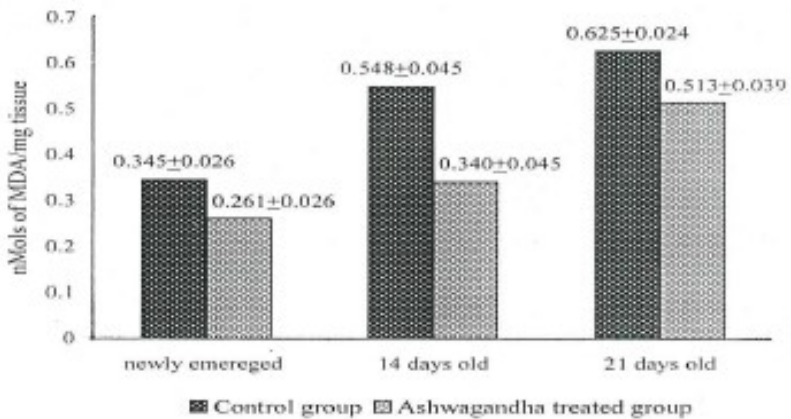


Fig. 2: Effect of Ashwagandha root powder on lipid peroxidation in the form of nMols of MDA/mg tissue in female *Drosophila melanogaster*.

There is an increase in lipid peroxidation during oxidative stress and during the process of aging (Gutteridge 1995, Pratico 2002). In the present investigation also, age related increase in lipid peroxidation was observed. During aging there is an increase in oxidative stress due to free radical attack (Hassan, 1985, Patro *et al.*, 1987, Hammer and Braum 1988). At the molecular level, damage to phospholipids and other lipids in the membrane by free radicals can affect membrane integrity, membrane fluidity and transmembrane electric potential.

Within the cell, mitochondria are the major site of generation of Reactive Oxygen Species (ROS). If these free radicals are not scavenged successfully, will first attack the mitochondria and thus mitochondria get damaged (Brunk and Terman, 2002). Damaged mitochondria are given to the lysosomes for degradation and recycling. At the same time lysosomes are also affected by the increased oxidative stress. The free radicals destabilize the lysosomal membrane resulting into leakage of the lysosomal membrane (Wan *et al.*, 2001). Free radicals also react with the lysosomal enzymes, resulting into oxidation of these enzymes and finally their cross linking. As a result, these enzymes are inactivated and are unable to perform the intra-lysosomal degradation. As a consequence, there is delay in removal of the waste and damaged macromolecules and organelles from the cell. The damaged mitochondria remain in the cytoplasm waiting for lysosomal degradation and cannot be replaced by new mitochondria (Brunk and Terman 2002). These damaged mitochondria will produce less ATP and high amount of free radicals (Bai and Cederbaum 2001), which will again cause more and more damage to the cell. This may result in cell death, leading to deterioration, which is nothing but aging.

In Ashwagandha root powder treated group, it has been found that there is highly significant decrease in lipid peroxidation in all age groups as compared to the control group in both the sexes. This shows the antioxidant property of Ashwagandha. Gupta *et al.* (2003) noted copper induced inhibition of lipid peroxidation in the spinal cord of Wistar rats. Chaurasia *et al.* (2000) also found that Ashwagandha root extract regulated lead toxicity with special reference to lipid peroxidation in live and kidney of male mouse. Dhuley (1998) found that Ashwagandha root extract decreased lipid peroxidation in stress

induced animals. Scartezzini and Speroni (2000), Mishra *et al.* (2000) and Bhattacharya *et al.* (2001) also demonstrated antioxidant property of Ashwagandha. Our investigation is also giving support to these results. Ashwagandha root powder treatment reduced oxidative stress and thereby the lipid peroxidation. Ashwagandha contains flavonoids and many active ingredients of the withanolide class. Withanolides are believed to account for the multiple medicinal applications of Ashwagandha (Grandhi 1994). These molecules are steroidal in nature. Ashwagandha provides potent antioxidant protection (Panda and Kar, 1997; Bhattacharya *et al.*, 2001; Gupta *et al.*, 2003) stimulates the activation of immune system cells, such as lymphocytes and phagocytes (Anabalgan and Sadique 1981; Wagner *et al.*, 1994; Davis and Kuttan, 2002), counteracts the effects of stress and generally promotes wellness, making it an important tonic or adaptogen (Bhattacharya and Murugunandanam, 2003; Singh *et al.*, 2003).

Throughout the experimentation it has been found that there are higher values of lipid peroxidation in female flies as compared to males in both the control as well as treated groups. This might be due to the presence of large amount of fat bodies in females as compared to males.

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Age as a Factor in Women's Attitudinal Disposition Towards Street Children in Botswana with Implications for Intergenerational Relationships and Practice

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ABSTRACT

This study investigated age as a factor in the attitudinal disposition of women towards street children in Botswana. The main goal was to determine how age interacts with women's attitudinal disposition towards street children, and to highlight the implications of the interaction for intergenerational relationships and practice. In order to achieve the set goal, a stratified random sample of 618 women was drawn from the Southern Region of Botswana, consisting of the Gaborone, Lobatse, Jwaneng, Kanye, Ramotswa, Molepolole, Mochudi, Southern, South-East, Kweneng and Kgatleng census districts. The ex-post factor design was adopted to investigate the possible effects of the independent variable of age on the dependent variable, specified in this research, as attitudinal disposition towards street children. A validated questionnaire titled Women's Attitudinal Disposition Towards Street Children Questionnaire (WADTSCQ) was adopted and applied in this study. Its reliability was determined using Cronbach alpha and the 'r' was found to be 0.95. The research question formulated and answered in this study was tested for significance difference at 0.05 level. In analyzing the data, use was made of the One-way Anova and associated post-hoc T-test and percentage for frequency. The results revealed that there was a significant difference between the mean scores of women in different age brackets as far as negative attitudinal disposition

towards street children was concerned. On the basis of the research question, conceptual framework and methodology, the researcher proposed the implications of the finding for intergenerational relationships and practice.

Key words : Intergenerational relationship, Street children, Attitudinal disposition, Age

The phenomenon of street children, as a local and global issue, has been studied from purely sociological, economic, political, cultural and medical perspectives. Kann, Nleya and Mapolelo (1989) have studied street children from a purely sociological perspective in the context of Botswana. Many of these studies have drawn attention to the root causes, trends and effects of the phenomenon. In all such studies, the intention had always been the desire to solve problems, thereby helping these children to get back into the mainstream of decent living once again. In most cases, women are seen as constituting a very tangential solution to the problem. Again, many of the studies have not paid sufficient attention to the implications of the phenomenon of street children for intergenerational relationships and practice, especially in the context of Africa. The paper, therefore, articulates the phenomenon of street children from the perspective of women attitudinal disposition, and it is based on Botswana. It proceeds with a highlight of the growing phenomenon of street children, its comprehension and manifestation, runs through the articulation of the research problem, question, purposes, significance, scope, limitations, conceptual framework, methodology, results and discussion, and terminates with a section on the implications of the finding for intergenerational relationships and practice in Botswana, in particular, and Africa, in general.

The Growing Phenomenon of Street Children

In 1997, the United Nations Children's Fund (UNICEF, 1997) estimated that one in every five children in developing countries live in extremely difficult circumstances and that between 50 and 100 million of these boys and girls work or even live on city streets. No country and, virtually, no city anywhere in our world today can escape the presence of these street children (Annan, 2001). The existence of street children reflects upon each society and upon the world order in general as a mirror image of our poor society, social health and welfare system. This phenomenon has attracted differing responses

from different interests or groups of persons. While some governments have preferred attacking the problem from sociological perspective, for example the Botswana Government, others chose to emphasize the educational perspective, for example, India. The response to social phenomenon may also vary from one individual to another. It all depends on the perspective from which one is viewing the problem. While there could be differences in the response, it is particularly instructive to understand the perspective of women.

There has been a national concern over the phenomenon of street children for a very long time. More specifically, the Botswana Government has been bothered by the incidence of the increasing number of street children. In April 1992, the then President of Botswana, Sir Ketumile Masire, appointed a National Commission on Education to review the 1977 National Policy on Education. Under the terms set up for the Commission, several studies were carried out. One of such studies focused on street children in the urban cities in Botswana (Mogome-Ntsatsi and Selepeng-Tau, 1993). Similarly, Kann and others (1989), had also studied street children. These studies are in themselves very valuable in comprehending the phenomenon of street children in Botswana. But none of the studies has ever attempted to examine the problems posed by the phenomenon from the point of view of intergenerational relationships and practice.

The 1994 National Policy on Education, which emanated from the work of the 1993 National Commission, drew attention to the incidence of street children. In that policy, responsibility for promoting, supporting and monitoring street children in the primary schools was given to the Department of Non-Formal Education. That Department was expected to translate into actions Government objectives directed at alleviating the problems confronting street children.

Programmes for Street Children in Botswana

There are also organisations working with street children in Botswana. Some of these include the Hope Mission Centre, the Gaborone City Council, Childline Botswana Trust Fund, Botswana Nurses Association Children Programme, Botswana Baptist Centre, the Catholic Mission, and Botswana Christian Initiatives Programme. Specific mention might be made of the United Congregational Churches of Southern Africa (UCCSA) involvement with the

Botswana Christian Council. Both organizations develop different kinds of literature that are sold, and the proceeds invested in the award of bursaries for needy children (Mokqwathise, 1988, pp. 10-20]. There are other organizations that are actively involved in trying to meet the needs of street children. Research has revealed that the Bona Ba Rona Trust and the Childline Agency have been championing the cause of children who have suffered deprivations (Molebatsi, 1994, pp. 10-15). According to Ntombi (1991), there is also a strong position being maintained to the effect that children variously labeled as “runaway”, “urchins”, “eyesores”, “dioute”, and “Bo Malalapipe” are to be blamed for their plight and should be severely disciplined for having gone against tradition. But Ntombi (1991) has argued that the children are not to be blamed for they took to the street because many parents and grandparents have been unable to live up to their normal traditional responsibilities. From his study, it was discovered that the street children claim that the street is a better alternative to their homes. It should be noted that the major activities covered by these programmes include the provision of shelter (some in form of stop over), cleaning center (where they can bath and wash their clothes), medical aid, canteen (where they can get food and health care at very low cost), counselling centres (where individual conflicts can be resolved), and non-formal education center (here they can have skill training and technical training). It is therefore disturbing that the street children still prefer the street in spite of the alternatives provided by the formal structures of government.

Statement of the Problem

It has been suggested that women take the most responsibility for the upbringing and continuous nurture of the child. If anything went wrong along the line, women are the first to be blamed for negligence. Such an accusation had always been countered by women almost everywhere, and that is understandably so. It has also been suggested that in an environment like ours where the middle age is being wiped out by HIV/AIDS, it is reasonable to expect that grandparents should have a crucial role to play in the upbringing and nurturing of street children. This study therefore focused on the women's general attitudinal disposition to street children as a factor of age, and the implication this should have for intergenerational relationships and practice. The study deliberately focused on women because 47% of

households in Botswana are headed by females and more and more are raising children on their own as death through HIV/AIDS increases. Even with the remaining 53% of households headed by men, culture requires that female members of the household should spend more time with the children, irrespective of the fact that both husband and wife could be workers. There is also an increase in teenage parenting among female in Botswana. Women carry the greatest burden of bringing these children up. They go through pains and travails which men may not sufficiently appreciate in bringing these children into this world. Therefore, women's attitude towards these children should differ considerably from that of any other interest groups, and that is one major reason this study focuses attention on them.

The stress women go through is more complicated than has been illustrated by Mathur (1981). The propensity for stress on the woman is increased by the issue of broken marriages. This probably leaves the woman with the sole responsibility for her home and the children. In several societies, women's burden seems to have been made heavier due partly to the increase in the number of the children who are orphaned as a result of death of fathers. Such deaths arise from a combination of several factors like HIV/AIDS and civil wars. It is an open secret that with an increase in the spread of HIV/AIDS, there is an increase in death in the family. Many children are becoming orphans from these numerous sources of death. This development has increased the number of children to be cared for by a single woman with limited resources. Where this responsibility becomes too much for the woman, there is the tendency to give up and allow the children to take refuge in the streets. The problem then is: how are women who are already under pressure going to react to this additional and essential duty of caring for the street children? Many studies have shown that childhood experiences are an important aspect of one's personality that form the basis of behaviour in later life (Lisindi, 2000). Furthermore, many studies have shown that age-related attitude is an important aspect of one's personality that forms the basis of behaviour (Okoh, 1978; Lawrence, 1980). The complexity of the situation confronting street children in our context certainly require that we adopt a kind of multifaceted approach to studying ways and means of helping them.

In most cases, there are institutional arrangements and provisions for street children. Such structural arrangements are most unfortunately not far reaching enough because they are not getting down to the root of the problem, which is the home. The family unit as an axis of solution is supposed to be properly focused. And, in Africa, grandparents play invaluable roles in making up for the shortfalls in parental care.

Purpose of the Study

Based on the foregoing, this study aimed at investigating an important aspect of the personality of women, which is attitude in relation to age. Anastasi (1976) succinctly stated that an important aspect of personality is the strength and direction of the individual's interests, attitudes, motives and values. Carefully studying such an aspect of personality in the context of age serves the purpose of illuminating a major concern in national development in Botswana, in particular, and, Africa, in general.

The Research Question

In pursuance of the statement of the problem and the purpose enunciated above, the study sought to answer the following specific research question:

How does age influence the attitudinal disposition of women towards street children in Botswana, and what are the implications of this for intergenerational relationships and practice?

Significance of the Study

Investigating the general attitudinal disposition of women in Botswana towards street children might have multiple cross-cultural and mono-cultural benefits. Internally, this study should highlight the specifics of women's general attitudinal disposition towards street children, and this could be much more than could be explained by theories that do not reflect the indigenous culture. Externally, this study should be able to reveal outcomes that might enable researchers to engage in cross-cultural comparisons and comprehension of manifest intervention strategies that have been applied towards resolving issues incumbent upon street children. It is with this intention that the research question was so structured. It is hoped that the findings would be useful in developing effective intergenerational strategies that would help women and grandparents in understanding

better how to assist society in reducing the growing trends in street children phenomena if it is found that they are not favourably disposed to these children.

The study might spur others in the helping profession to develop better programmes in the search for lasting solutions to issues affecting street children. Findings emanating from this study might also be useful to the several charity organisations and foundations that are constantly exploring ways of getting support for their programmes. Finally, the awareness that the women might derive from this study by being properly informed through this research could be useful in several other ways. For example, getting the women to evaluate how they perceive street children and the problems therein could draw their emotional and physical support.

Scope of the Study

This study reported here was conducted in Botswana. It focused on the attitudinal disposition of women from different age-groups in Botswana. For the purpose of the study, the Southern Region was purposively selected and divided into eleven census districts as demarcated by the Central Statistics Office. In concrete terms, this study focused on census districts consisting of urban towns of Gaborone (comprising of the Village- Extension 15, Old Nlaedi Extension 13, Broadhurst Extension 17), Lobatse (comprising of Town Centre), Jwaneng (comprising of Kgalagadi Area); urban villages- Kanye (comprising of Gasita, Sekalaba), Ramotswa (comprising of Potsane); Molepole (comprising of Gamakoko and Phiring); rural villages- Southern (comprising of Khachea, Maokane, Sekoma), Kweneng (comprising of Mamhiko), Kgatleng (comprising of Modipane, Sikwane and Pilane), and South-East (comprising of Otse and Mojabane).

Although the most recent census puts Botswana's population at about 1.7 million, the sample was determined before the figures were released. Effectively therefore, the 1991 census figures have been used in this study.

As at 1991, Botswana's total population was 1,326, 796. Since 1980, 87.3% of Botswana's population has lived in the eastern part of the country. The major reason for this uneven distribution of population is the desert condition that exists in the Western part of the

country. Population concentration in the East is a function of fairly good arable lands in this part of the country.

Limitations of the Study

One of the limitations of the study is that it was restricted only to the Southern Region of the country. There would have been need to cover the entire country but this was not possible for financial and time constraints. Furthermore, this study did not consider the attitudinal disposition of men. Yet, men could have immense influence on women's attitudinal disposition since they are normally expected to live together in the same society and have profound interactions. Language barrier which emanated from cultural differences between the researcher and the population of the study was a problem since the researcher is not from the research environment in terms of ethnicity. This was why the researcher had to rely on interpreters in the administration of the research instruments, especially in the rural areas.

Conceptual Framework

Scholars have generally regarded attitudes as mental readiness or implicit predisposition that exerts some general and consistent influence on a fairly large class of evaluative responses. The word "attitudes" itself has been defined by The Longman Dictionary of Contemporary English as :

"Opinions and feelings that you usually have about something"

But attitudes are generally much more than opinions and feelings. Over the years, more scholars have attempted to define attitudes and propose theories about how they affect dispositions of different categories of persons. Anderson (1981) has quoted Chave as having defined attitudes as a complex of feelings, desires, fears, convictions, prejudices of, or other tendencies that give a set of readiness to a person because of varied experience.

In 1935, Allport cited some sixteen definitions of attitudes but arrived at three major features, namely:

- Preparation or readiness for favourable or unfavourable response
- This response is organised through experiences

- The response is activated in the presence of all objects and situations with which the attitude is related.

On the other hand, Fishbein and Ajzen (1975) have also identified three essential features of attitude as follows:

- Attitude is learned
- It predisposes action
- The action is consistently favourable or unfavourable towards the object.

The similarity of the essential features is striking and therefore implies a certain degree of agreement as to the nature of attitude. In an effort to understand attitude in relation to other element of the affective domain, Anderson (1981) identified five characteristics: emotions, consistency, target, direction, and intensity. With this understanding, this study adopted two main theories to guide its focus, namely:-

Theory of Social Comparison by Festinger

In brief, the central idea of this theory, according to Festinger (1957) is that people need to compare themselves to others in order to evaluate their own abilities and opinions. Social comparison processes also influence our attitude as well as our ability evaluations. Because there is often an objective standard against which to evaluate attitude, we can do so only by comparing ourselves to other people. In order to find out whether one's attitude towards nuclear power is extreme, valid, rational or justifiable the individual must know what other people think. Festinger's theory states that because we are exposed to many different sources of information and opinion we may expect, we are bound to run into those who have the opposite point of view.

Cognitive Dissonance Theory

In this theory of Cognitive Dissonance, Festinger (1957) extended the notion that people cannot tolerate discrepancy between their own and other similar people's attitudes. Festinger retained the notion that discrepancies or inconsistencies cause an uncomfortable tension that people try to reduce or eliminate, but he assumed the discrepancy itself to exist entirely within the individual's own cognitive system. There are two classes of decision-making situations that the theory describes as areas of relevant application, namely: forced public compliance and

free choice decision-making. In the first type of situation, situational pressures induce the person to behave in a way that counters attitudinal causes. Therefore, we might classify someone's actions in two ways, namely; situational (or external) and dispositional (or internal) behaviours.

Situational attributes identify factors in the social and physical environment that are causing the person to behave in a particular way (Belsky and Yondra, 1989). In the view of the researcher, a woman may take on a street child simply because of her position in church and she sees it as proving herself to be godly. In other words, the person's behaviour says more about Christian appreciation than about the person. Furthermore, it is assumed that without her holding a position in church, the person would not engage in the given behaviour. In contrast, dispositional attributions identify the causes of behaviour as reflecting some unique property of that person. It is common knowledge that communication, attention, comprehension, acceptance and retention will persuade a person. The first process deals with attention. Obviously, if people do not pay attention to communication no matter how persuasive, well-organised, local and appealing the information is, it will not change anyone's attitude. The second process deals with comprehension. Even if the audience listens to the message, it is worthless if the audience did not understand what must have been said. The third process is acceptance. Acceptance of the argument and conclusions of a persuasive communication is the result of the rewards that are presented in the communication. If, for example, you do not believe that street children are a result of unfortunate circumstance and need a great deal of love and understanding to restore them to normal, then it will be difficult for you to accept a degree of responsibility toward the street children. Finally, for the communicated message to be effective, it must be remembered. Retention of the major point is the fourth critical process determining the efficacy of a formal communication.

Attitudinal Dispositions of Women Towards Street Children

In Allport's (1961) orientation literature, an attitude is seen as an implicit approach or avoidance response to an object. Thus, an attitude may be described as the effective or emotional reaction people have to the attitude object. This way, it portrays their liking or disliking for a person, object, and group of people or symbol. Attitudes (the cognitive

component) are influenced or changed by altering the opinions or beliefs (the cognitive or knowledge component that people have). A relevant example of the important relationship between people's beliefs and their attitudes comes from a study on birth control. In a survey of 20 low income mothers, Crawford (1973) found that those who had more favourable attitudes towards birth control, for example, believed; it prevents unwanted pregnancy, it reduces worry about becoming pregnant, it helps solve the population problem, it makes sex more enjoyable. Those who had only a few beliefs or were uninformed had less favourable attitudes toward birth control. In the case of street children, it is very likely that adequate knowledge of the problem of the street children will equip women to readily accept their role in given hope and life to them.

Research Methodology

This section presents the method and procedures employed in the study. The following sub-topics: research designs, variables, population, sample and sampling procedures, research instruments, administration of research instruments and the procedure for data analysis are fully discussed.

Research Design

This study adopted the quantitative design. It must be noted that the study was a descriptive survey which adopted the ex-post facto approach. Descriptive research generally involves collecting data in order to test hypothesis or to answer questions concerning the current status of the subject of a study (Gay, 1987). This design was deemed most appropriate since the researcher did not have any control over the independent variable and retrospectively study it for its possible association with the dependent variable. According to Kerlinger (1973), in ex-post-facto research, inferences about relations among variables are made without direct intervention from concomitant variation of independent and dependent variables. This design is chosen to allow for the validation of the predictions made in the statement of research questions.

Variables

The main variables of interest in this study were the dependent and independent variables. The dependent variable was attitudinal disposition to street children – this is the variable that was measured in

this study. The independent variable was the age of women. Since these variables are inherently not manipulatable, the researcher studied the changes that occurred in the dependent variable as a result of arrangement of the independent variable.

Research Population

The population of this present study were all women in Botswana between ages 15 and above. According to the 1991 census figures, the total number of women nationwide was 321,726. The population of 321,726 women was quite large for a study of this nature. If the researcher was to draw a sample from that figure by applying the Krejcie and Morgan (1971) table derived from the US National Education Association (1964) formula computed as:

$$S = X^2 NP (1-P) / d^2 (N-1) + X^2 P (1-P)$$

Where:

- S = required sample size;
- X^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level and for a 95% confidence level, $X^2 = 3.841$;
- N = the population size;
- P = the population proportion;
Normally assumed to be 0.5 since this would provide maximum sample size; and
- d = the degree of accuracy expressed as a proportion of the error that can be tolerated in the sample (0.5).

One would have ended up with a sample of approximately 1639 women. This was determined as follows:

$$S / N \times P$$

Where:

- S = 382
- N = 75,000
- P = 321,726

Computed:

$$382 / 75,000 \times 321,726 = 1638.647.$$

Since we cannot have humans in averages, this would give us approximately 1639 nation wide. The study population was delimited to the southern region of Botswana because of limited resources (financial and professional personnel) that were available to the researcher who was self-sponsored.

Sampling and Sample Technique

This study utilized the sampling frame developed by the Botswana Central Statistics Office (hereinafter, CSO). That is what is presently being used by the CSO as well as other researchers. The CSO (1992) sampling frame divides Botswana into three main categories, namely:

1. Urban towns
2. Urban villages, and
3. Rural villages.

It must be observed that within each of the three categorisations above are census districts. Each census district is in turn divided into localities or blocks that are referred to as enumeration areas (EAS). A census district, according to the CSO (1992), is a phrase used for operational convenience. A census district can be a whole or a sub-division of an administrative district or township. On the basis of the classification given by the CSO (1992), the following will apply:

- The towns of Francistown, Lobatse, Selebe-Phikwe, Jwaneng, Orapa, Sowa and the City of Gaborone are designated a census district;
- The urban villages include Kanye, Moshupa, Ramotswa, Tlokweng, Molepolole, Mogodishane, Thamaga, Gaborone, Mochudi, Serowe, Palapye, Mahalapye, Bobonong, Lethakane, Tutume, Tonota and Maun, each of which is designated a census district;
- The rural districts are designated as follows:
 - The southern district sub-divided into Ngwaketse and Barolong census districts;
 - North-West district sub-divided into Ngamiland south, which include the Okavango Delta, Ngamiland North and Chobe Census districts;
 - Gantsi district, sub-divided into Ghantsi and central Kgalagadi Game Reserve Census districts;

- Kgalagadi district, sub-divided into Kgalagadi South and Kgalagadi North Census districts and each of them corresponds to the administrative sub-district;
- The central district is sub-divided into Serowe/ Palapye, Central Mahalapye, Central Bobonong, Central Boteti and Central Tutume census districts and each of them corresponds to the administrative sub-districts;
- Kgatleng, South-East, Kweneng and North-East administrative districts are each designated as a census district (CSO, 1992).

This study did not cover the entire country. Instead, it was limited to the Southern Region of Botswana and the sampling included only the three main strata of urban towns, urban villages and rural villages. From each stratum, the researcher randomly sampled 2 census districts.

On the basis of the geographical scope mapped out in this study, the sample frame consisted of the eleven census districts presented in Table 1 below:

Table 1 : Sample Frame Based on Proportionate Random Sampling

Stratum	Census District	EAS/ Localities	Proportion in Pop.	No. of EAS in Sample
(a)	(b)	(c)	(d)	(e)
Urban Towns	Gaborone	151	0.084	32
	Lobatse	12	0.006	2
	Jwaneng	7	0.004	1
Sub-Total		170	0.094	35
Urban Villages	Kanye	141	0.078	29
	Ramotswa	37	0.020	7
	Molepolole	110	0.061	23
	Mochudi	86	0.048	18
Sub-Total		374	0.207	79
Rural Villages	Southern	503	0.278	106
	South-East	98	0.054	20
	Kweneng	514	0.0285	10
	Kgatleng	147	0.081	30
Sub-Total		1262	0.698	226
Grand Total	1806	100	340	

KEY : EAS: Enumeration Areas, CSO : Central Statistics Office

Column 3 in Table 1 above shows the number of enumeration areas identified in each district (CSO, 1992). The proportion of enumeration areas in each census district, as shown in column 4, is calculated by dividing the number of enumeration areas in each census district by the total enumeration areas in the area of study.

Using a table for determining sample size (Krejcie and Morgan, 1970), the figure 382 is a representative sample from a total of 1806 enumeration areas in the Southern Region. Column 5 in Table 1 above shows the number of representative enumeration areas in the sample, and this is calculated by multiplying column 4 by 382. This value of 382 was derived from Krejcie and Morgan (1970) table for determining sample size from a given population. The researcher identified a total population of 181,342 women nationwide. The last population segment in the Krejcie and Morgan (1970) table is 1000000 (one million) (See appendix). The N of 1000000 is far above the population of 181, 342 we are working with so we settle for an N of 75,000 which gives a sample size of 382. The application of the principle enumerated above has yielded the values detailed in Table 2 below:

Table 2: Distribution of Respondents by Census Districts

Census District	Women Population	District Proportion in population	Number of subjects in the sample (Proportion x 924)
Gaborone	43,481	0.239	222
Lobatse	7,871	0.043	40
Jwaneng	3,275	0.018	17
Kanye	8,259	0.045	42
Ramotswa	4,983	0.027	25
Molepolole	9,935	0.540	51
Mochudi	6,742	0.037	34
Southern	32,431	0.178	165
South-East	11,426	0.063	58
Kweneng	39,976	0.220	204
Kgatleng	12,963	0.071	66
Totals	181,342	100.00	924

*Figures extrapolated from the Botswana Population and Housing Census (CSO, 1991)

Using the Krejeic and Morgan (1970) table, the sample is derived as follows:

$$\begin{aligned} N &= 75,000 \text{ (Closest Number to 181,342)} \\ S &= 382 \text{ (Sample size that tallies with 75,000)} \\ 75,000 &\Rightarrow 382 \end{aligned}$$

Therefore:

$$382 / 75,000 \times 181,342 = \mathbf{924 \text{ Sample}}$$

This means that this study targeted 924 (Nine hundred and twenty-four) women, from the three strata of urban towns, urban villages and rural villages. The distribution of the respondents from each census district within the three strata is shown in Table 2 above.

Selection of respondents from stratum was done through proportionate random sampling. Using this strategy, 279, 152 and 493 were randomly selected from urban towns, urban villages and rural villages respectively.

South East is made up of 3 villages. Kweneng is made up of 39 villages. Kgatleng is made up of 12 villages, and Southern is made up of 39 villages.

South East, Kweneng, Kgatleng and Southern are rural villages as specified by the 1991 Census. Purposive and random sampling techniques were applied in selecting the villages covered. Consequently, in the South East, the researcher selected the first rural village which is Otse. From Otse, 58 women were randomly selected. In Kweneng, the researcher selected every tenth [10th] village and by that process, Mamhiko, Kwamakwane and Sojwe were selected. The 204 subjects that needed to be selected from Kweneng were shared among the 3 villages, and this means that from each village 68 women would be selected. In Kgatleng, there were twelve [12] rural villages. Every fourth village was randomly selected and this led to the inclusion of Modipane, Sikwane and Pilane, and since we needed to sample 66 women from here, it does mean that from each of these villages 22 women were selected. In Southern, there are 37 villages. The researcher selected every 10th village and this led to the selection of Khakhea, Maokane and Sekoma. The number of villages was used to divide the total sample size of 165 women in Southern, and this implies that from each village we drew a sample of 55 women.

Because there is no readily available listing of all women in each enumeration area, a census of such women in each enumeration area was done in order to select the required sample for in-depth interview.

The description of the sample may look complex at first glance. However, using stratified and proportionate sampling definitely helped us in comparing between and among women categories. For example, it has been possible at the end to compare between urban towns and urban villages and rural villages.

Cluster sampling was also used because there was no compiled list of women for each major location (that is, urban towns, district). Consequently, the researcher divided the enumeration area into clusters. This served as the unit of analysis.

Research Instruments

The instrument used for data collection was a questionnaire titled *Women's Attitudinal Disposition Towards Street Children Questionnaire [WADTSCQ]*

The questionnaire was divided into two main parts : 1 and 2.

Part 1 of the instrument was designed to elicit response, on the subjects' personal data. This section of the questionnaire elicited response on crucial demographic characteristics possessed by the subjects that could help to explain their attitudinal disposition to street children. Part 2 of the questionnaire consisted of 32 items. The construction of the items was based on the summated rating scale of the likert-type scale designed by Rensis Likert (1982). The construction of this scale entailed generating a list of statements related to attitude to street children. The three sub-scales consisted of sixteen positively and sixteen negatively worded items. This was done in order to prevent response set. The respondents were expected to indicate their degree of agreement or disagreement with the given statement. A set of graduated, weighted response options was provided. The Likert scale is constructed to have its mid-point labelled either neutral, or uncertain on the attitude continuum which ranges from very positive to very negative. On a five-point scale running from 1 to 5, a response of neutral or uncertain attracted a score of 3. In which case, the scale point labelled neutral was interpreted to represent some measure of attitude, which had a magnitude of 3 on a scale yielding a maximum score of 5.

In order to avoid the gross error in interpretation, this study adopted the Likert scale as modified by Nworgu (1986). In this scale, it was assumed that when an individual was neutral or uncertain about an issue, the responses given should earn a score of three. To avoid forced response, or non-response to any item, the present scale made provision for subjects who were undecided or uncertain in any item to express their opinion. Thus the modified Likert scale adopted in this study is shown below (modeled after that of Nworgu, 1986):

Very positive.....	5
Positive.....	4
Neutral.....	3
Negative.....	2
Very Negative.....	1

Data Description

This section explains the two-phase definition of variables that led to the determination of the composite attitude score. At the phase of response, each respondent provided relevant demographic data. At the second phase, each respondent answered the 32 items on attitudinal scale that ranged from very negative to very positive. The 32 items were selected based on the theoretical framework.

In Part 11 of the questionnaire, 16 items were positively phrased; for example, “every child needs to be cared for by both parents” so that agreement was coded as “positive attitude” while disagreement implied a “negative attitude”. On the other hand, 16 items were negatively phrased: for example, “I use street children but do pay them for their labour” so that agreement implied negative attitude and disagreement implied a positive attitude.

Interpretative Norm

The overall [composite] attitude score was obtained by aggregating the newly derived variables to ensure that a high score [greater than or equal to $3.5 \times 32 = 112$] implied overall positive attitude while a low score [less than or equal to $2.5 \times 32 = 80$] implied an overall negative attitude. The number of missing cases list-wise among the 32 items was 242. To reduce the total number of missing values [not stated] in the composite score, a non-response to any item was treated as zero when computing the composite score. It was found that eight [8] of the 628 women surveyed did not respond to any of the

items. Another two women responded only to the first 8 of the 32 items and were not included when determining composite scores. Hence the effective sample size was 618.

Validity

Face and content validity of the scores in the research instrument was achieved through various methods. Test experts in the Department of Educational Foundations (Measurement and Evaluation Unit) along with two experts in Social Work Department at the University of Botswana assisted in evaluating the questionnaire items against the background of the purpose of the study, the research question and the theoretical framework. Item by item evaluation was carried out and the comments and suggestions made by the experts used in reviewing the items. Subsequently, the items were subjected to a pre-testing on thirty randomly selected women. Items that were not clear and to which responses had not been made in the expected direction were deleted from the instrument. Validating items in each of the two sections of the questionnaire further strengthened the instrument. The validation process involved correlating the scores of each item to the total scores on the sub-scale. All the items, which had a correlation of 0.20 and above were retained, and those below were discarded. According to Cronbach (1970), if a criterion can be predicted only with validity of 0.20, the test may still make an appreciable practical contribution.

Reliability

Although the reliability of the scores in the research instrument was determined during the pilot study, it was necessary to test for reliability because of likely events of reconstruction and addition of new items on the questionnaire. The reliability of the instrument was determined using the split half reliability procedure. This required only one administration of the test as against a test-retest technique. The split half reliability method is preferred because according to Gray (1987), it helps to eliminate some errors of measurement like differences in conditions, which may occur in test-retest reliability method. In order to establish the reliability of the research instrument, the questionnaire was administered to thirty (30) women randomly selected.

The procedure for determining the split half reliability was as follows:

1. The total of forty-nine attitudinal items were administered to thirty subjects.
2. After administering the test, the responses to items in part 2 which dealt attitudinal disposition items were divided into two comparable halves by sorting all the odd items into one half and all the even items into the other half.
3. Each subject's score on the two halves were computed; consequently, each subject had two separate scores – a score for the odd items and a score for the even items.
4. These two sets of scores for the thirty subjects were correlated using Pearson's Product Moment Correlation Coefficient formula.

Since the split half reliability represented the reliability of only half of the item in a single test, a correlation formula was applied. The Spearman Brown (SB) Prophecy Formula was employed in estimating the reliability of the total test for reliability of one of its halves. In order to further confirm the obtained reliability coefficient and the internal consistency of the test items, another procedure for determining reliability was employed. The Kuder-Richardson formulae was developed as a check for errors that might arise from the split half procedure. The variance of each item in the test was determined by the use of the analysis of variance.

Procedure for Data Analysis

After administration and collection of the questionnaire, they were sorted out based on the criteria adopted in the study. Respondent scores on the attitude scale were computed to get their means and standard deviations. This is the first stage, which is the descriptive statistical analysis.

The questionnaires were sorted out into women in urban towns, urban-villages and rural villages. The score for these different categories of women were assembled in order to answer the research question for difference among the groups since the items in the questionnaire were made up of negatively and positively phrased items.

In finding answers to the research question, the t-test statistic for comparing two independent sample means was adopted. All statistical

analysis for testing the stated research question was based on the 5% alpha level of significance.

The field experience had revealed that the number of missing cases list-wise among the 32 items was 242. To reduce the total number of missing values [that is, not stated] in the composite score, a non-response to any item was treated as zero when computing the composite score. It was found that eight [8] of the 628 women surveyed did not respond to any of the items. Another two women responded only to the first 8 of the 32 items and were also not included when determining the composite score. Hence the effective sample size was 618, which was about two-third of the total number of expected sample size. This was considered as high enough for a valid analysis.

Results and Discussions

Effect of Age on Women's Attitudinal Disposition

The researcher wanted to know whether or not women's age do affect their disposition towards street children. The question was posed as follows: *Is women's age a factor affecting their disposition to street children?*

Table 3 provides the data generated to answer this question.

The data in Table 3 reveal that the mean scores of women in the different age groups were quite similar. They range from 101.6 to 109.3. All the 95% confidence intervals for the groups overlap indicating that these means are not significantly different from one another at $\alpha = 0.05$ level of significance. ANOVA seems suggest that some of the women in different age groups were significantly different in their disposition towards street children as shown in Table 3. However, POST HOC and TURKEY TESTS do not reveal which pairs of the age groups are different. Furthermore, homogenous subset comparison gives only one group indicating that there might not really be a significant difference between the age groups.

Table 3 : Mean, standard deviation and Confidence Interval of general attitudinal disposition of women to street children by age

Age	N	Mean	Descriptive ATTITUDE				Mini- mum	Maxi- Interval
			Std. Deviation	Std. Error	95% Confidence Interval for Mean			
					Lower Bound	Upper Bound		
Below 20	14	104.1429	13.71612	3.66579	96.2234	112.0623	87.00	123.00
btwn 20-25	90	106.8889	10.43809	1.10027	104.7027	109.0751	79.00	144.00
btwn 26-30	112	103.9464	10.77438	1.01808	101.9290	105.9638	74.00	122.00
Btwn 31-35	98	104.2245	10.78040	1.08899	102.0632	106.3858	67.00	125.00
btwn 36-40	70	103.5714	6.57746	.78616	102.0031	105.1398	89.00	114.00
btwn 41-45	72	103.7500	11.75184	1.38497	100.9885	106.5115	62.00	126.00
btwn 46-50	36	109.2778	13.98287	2.33048	104.5467	114.0089	90.00	139.00
btwn 51-55	38	101.6316	14.64982	2.37652	96.8163	106.4469	50.00	123.00
btwn 55-60	26	107.1538	8.14711	1.59778	103.8632	110.4445	93.00	120.00
Above 60	36	102.0556	9.92240	1.65373	98.6983	105.4128	79.00	119.00
Total	592	104.5777	10.97362	.45101	103.6919	105.4635	50.00	144.00

Table 4: ANOVA summary table for women in different age brackets

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Age Groups	2187.102	9	243.011	2.050	.032
Within Age Groups	68981.324	582	118.525		
Total	71168.426	591			

It would be observed in Table 4 that the F – Value of 2.050 is significant at 0.05 level of significance. Thus, it was deemed fit to execute POST HOC tests to find out the source of the variation. This operation yielded data presented in Table 5:

Table 6: Data relating to homogenous subsets of attitudinal disposition of women in different age brackets towards street Children

Attitude		N	Subset for alpha = .05
<i>Turkey HSD</i>			1
Age	Between 51-55	38	101.6316
	Above 60	36	102.0556
	Between 36-40	70	103.5714
	Between 41-45	72	103.7500
	Between 26-30	112	103.9464
	Below 20	14	104.1429
	Between 31-35	98	104.2245
	Between 20-25	90	106.8889
	Between 55-60	26	107.1538
	Between 46-50	36	109.2778
Sig.			0.056

The tests consistently revealed that women in different age brackets are not homogenous.

That means that there is a significant difference between the mean scores of women in different age brackets as far as the negative attitudinal disposition towards street children is concerned.

Age of Women and attitudinal disposition to street children

The data show that the mean scores of women in the different age groups were quite similar. The mean scores ranged from 101.6 to 109.3. That means that the means were not significantly different since

they overlap. The homogenous subset comparison, however, indicated that there might not be a significant difference between the age groups. What this means is that age is not really a factor in the negative attitudinal disposition of women towards street children in Botswana. The scholarship on attitudinal disposition had consistently revealed that attitudes are learned and therefore age should not really be the main determinant of the direction of attitudinal disposition. To this end, therefore, one might agree that the results are very consistent with the position of Anderson (1981). The finding is also consistent with the views shed on the subject by Setlogile (1992) who had asked that we look more in the direction of culture and personality rather than age when investigating the causal relationship the researcher had attempted to determine in the basic assumptions.

On the contrary, the finding is inconsistent with the views held by Cicchetti (1988) and Herbert (1992) who had affirmed that the developmental tasks one confronted throughout one's progress through life remain critical in determining the direction of attitudinal disposition. This means that if one was concerned about reversing the negative attitudinal disposition towards street children one would rather apply Bowlby's (1995) theory of attachment and maternal deprivation. This theory really emphasizes only the first four to six months after birth as the basis and time for establishing such psychobiological bonds that a mother may require for maintaining proximity and therefore the bond needed for positive attitudes. Even though the duration of time specified by Bowlby (1995) might have been limited, it does have import in psychological experimentations and research.

Implications for Intergenerational Relationships and Practice

The concept of intergenerational relationships and practice is understood in this study to refer to a process of communicating and imbibing accumulated wisdom and relevant and sustainable elements in our culture such that everybody has access to a social support system that is reliable in times of distress. The researcher is fully adopting a definition of intergenerational programme as a provision in "which all generations, irrespective of age, gender, race, location, and socio-economic status, bind themselves together in the process of generating, promoting, and utilizing ideas, knowledge, skills, attitudes and values in an interactive way for the improvement of self and

community” (Oduaran, 2003, p. 28). It would be recalled that the main finding in this study indicated that age is not necessarily a factor in women’s negative attitudinal disposition towards street children in the present context. However, the challenged posed by the increasing numbers of street children in Africa can have implications for intergenerational relationships and practice in some ways. First, it is possible that the increasing involvement of grandparents in the upbringing of children in Botswana and then Africa would mean that both the street children and their grandparents need have some kind of rapport. The rapport that needs to be established can channeled along the lines of counseling women for attitude change to take place. Towards realizing this goal, women and grandchildren should be engaged in:

1. Building and maintaining trust and listening attentively to expressions of distress.
2. Reducing defensiveness, which protects current attitudes by way of adopting the reality principle.
3. Reducing egocentrism, which prevent seeing one’s problems from new perspective.
4. Discouraging demoralization, which decreases a person’s motivation to solve problems.
5. Replacing with real facts rumors and tale bearing which result from limited knowledge of an issue.

Having set the stage in the keeping relationship, the helper can adopt modeling and operant methods to help women who are having problems with street children or other related problems. In psychology, the study of modeling could be use. Modeling was defined by Pearly and Furukaw (1986) as the process of observational learning in which the behaviour of an individual or group in the model act as a stimulus for similar thoughts, attitudes or behaviours on the part of another individual who observes the model’s performance. Modeling may be used for helping clients to acquire and develop positive skills and also manage their anxieties.

The operant approach to changing altitude emphasizes the fact that behaviour operates on the environment to produce consequences as well as being controlled by that environment skinner (1990) said that it can be demonstrated that people choose behaviour based on

Table 5 : POST HOC tests on attitudinal disposition of women in different age brackets towards street children

Multiple Comparisons Dependent Variable: ATTITUDE Turkey HSD			Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval		
						Lower Bound	Upper Bound	
(I) Age	Below 20	(J)	Below 20					
			Between 20-25	-2.7460	3.12778	.997	-12.6800	7.1880
			Between 26-30	.1964	3.08615	1.000	-9.6054	9.9982
			Between 31-35	-.0816	3.11054	1.000	-9.9609	9.7976
			Between 36-40	.5714	3.18736	1.000	-9.5518	10.6947
			Between 41-45	.3929	3.17997	1.000	-9.7069	10.4926
			Between 46-50	-5.1349	3.42905	.893	-16.0258	5.7559
			Between 51-55	2.5113	3.40369	.999	-8.2990	13.3216
			Between 55-60	-3.0110	3.60897	.998	-14.4733	8.4513
			Above 60	2.0873	3.42905	1.000	-8.8036	12.9782
	Between 20-25	(J)	Below 20	2.7460	3.12778	.997	-7.1880	12.6800
			Between 20-25					
			Between 26-30	2.9425	1.54117	.663	-1.9524	7.8373
			Between 31-35	2.6644	1.58946	.809	-2.3838	7.7126
			Between 36-40	3.3175	1.73498	.661	-2.1929	8.8279
			Between 41-45	3.1389	1.72137	.720	-2.3283	8.6061
			Between 46-50	-2.3889	2.14693	.983	-9.2076	4.4299
			Between 51-55	5.2573	2.10618	.273	-1.4321	11.9467
			Between 55-60	-.2650	2.42396	1.000	-7.9636	7.4337
			Above 60	4.8333	2.14693	.423	-1.9854	11.6521
		Below 20	-.1964	3.08615	1.000	-9.9982	9.6054	
		Between 20-25	-2.9425	1.54117	.663	-7.8373	1.9524	

		Between 26-30					
Between	(J)	Between 31-35	-.2781	1.50589	1.000	-5.0608	4.5047
26-30	Age	Between 36-40	.3750	1.65875	1.000	-4.8933	5.6433
		Between 41-45	.1964	1.64452	1.000	-5.0266	5.4195
		Between 46-50	-5.3313	2.08581	.241	-11.9560	1.2933
		Between 51-55	2.3148	2.04385	.981	-4.1765	8.8062
		Between 55-60	-3.2074	2.37000	.940	-10.7347	4.3198
		Above 60	1.8909	2.08581	.996	-4.7338	8.5155
		Below 20	.0816	3.11054	1.000	-9.7976	9.9609
		Between 20-25	-2.6644	1.58946	.809	-7.7126	2.3838
		Between 26-30	.2781	1.50589	1.000	-4.5047	5.0608
		Between 31-35					
Between	(J)	Between 36-40	.6531	1.70371	1.000	-4.7580	6.0642
31-35	Age	Between 41-45	.4745	1.68986	1.000	-4.8926	5.8416
		Between 46-50	-5.0533	2.12174	.339	-11.7921	1.6855
		Between 51-55	2.5929	2.08051	.964	-4.0149	9.2007
		Between 55-60	-2.9294	2.40168	.969	-10.5572	4.6985
		Above 60	2.1689	2.12174	.991	-4.5698	8.9077
		Below 20	-.5714	3.18736	1.000	-10.6947	9.5518
		Between 20-25	-3.3175	1.73498	.661	-8.8279	2.1929
		Between 26-30	-.3750	1.65875	1.000	-5.6433	4.8933
		Between 31-35	-.6531	1.70371	1.000	-6.0642	4.7580
Between	(J)	Between 36-40					
36-40	Age	Between 41-45	-.1786	1.82740	1.000	-5.9825	5.6254
		Between 46-50	-5.7063	2.23284	.242	-12.7980	1.3853
		Between 51-55	1.9398	2.19369	.997	-5.0274	8.9071

Between 41-45	(J) Age	Between 55-60	-3.5824	2.50037	.917	-11.5237	4.3589
		Above 60	1.5159	2.23284	1.000	-5.5757	8.6075
		Below 20	-.3929	3.17997	1.000	-10.4926	9.7069
		Between 20-25	-3.1389	1.72137	.720	-8.6061	2.3283
		Between 26-30	-.1964	1.64452	1.000	-5.4195	5.0266
		Between 31-35	-.4745	1.68986	1.000	-5.8416	4.8926
		Between 36-40	.1786	1.82740	1.000	-5.6254	5.9825
		Between 41-45					
		Between 46-50	-5.5278	2.22228	.277	-12.5859	1.5303
		Between 51-55	2.1184	2.18294	.994	-4.8147	9.0516
Between 46-50	(J) Age	Between 55-60	-3.4038	2.49095	.937	-11.3152	4.5075
		Above 60	1.6944	2.22228	.999	-5.3636	8.7525
		Below 20	5.1349	3.42905	.893	-5.7559	16.0258
		Between 20-25	2.3889	2.14693	.983	-4.4299	9.2076
		Between 26-30	5.3313	2.08581	.241	-1.2933	11.9560
		Between 31-35	5.0533	2.12174	.339	-1.6855	11.7921
		Between 36-40	5.7063	2.23284	.242	-1.3853	12.7980
		Between 41-45	5.5278	2.22228	.277	-1.5303	12.5859
		Between 46-50					
		Between 51-55	7.6462	2.53208	.078	-.3958	15.6882
		Between 55-60	2.1239	2.80196	.999	-6.7753	11.0231
		Above 60	7.2222	2.56607	.134	-.9278	15.3722
		Below 20	-2.5113	3.40369	.999	-13.3216	8.2990
		Between 20-25	-5.2573	2.10618	.273	-11.9467	1.4321
		Between 26-30	-2.3148	2.04385	.981	-8.8062	4.1765
		Between 31-35	-2.5929	2.08051	.964	-9.2007	4.0149

Between 51-55	(J) Age	Between 36-40	-1.9398	2.19369	.997	-8.9071	5.0274
		Between 41-45	-2.1184	2.18294	.994	-9.0516	4.8147
		Between 46-50	-7.6462	2.53208	.078	-15.6882	.3958
		Between 51-55					
		Between 55-60	-5.5223	2.77087	.604	-14.3227	3.2782
		Above 60	-.4240	2.53208	1.000	-8.4660	7.6180
		Below 20	3.0110	3.60897	.998	-8.4513	14.4733
		Between 20-25	.2650	2.42396	1.000	-7.4337	7.9636
		Between 26-30	3.2074	2.37000	.940	-4.3198	10.7347
		Between 31-35	2.9294	2.40168	.969	-4.6985	10.5572
Between 55-60	(J) Age	Between 36-40	3.5824	2.50037	.917	-4.3589	11.5237
		Between 41-45	3.4038	2.49095	.937	-4.5075	11.3152
		Between 46-50	-2.1239	2.80196	.999	-11.0231	6.7753
		Between 51-55	5.5223	2.77087	.604	-3.2782	14.3227
		Between 55-60					
		Above 60	5.0983	2.80196	.723	-3.8009	13.9975
		Below 20	-2.0873	3.42905	1.000	-12.9782	8.8036
		Between 20-25	-4.8333	2.14693	.423	-11.6521	1.9854
		Between 26-30	-1.8909	2.08581	.996	-8.5155	4.7338
		Between 31-35	-2.1689	2.12174	.991	-8.9077	4.5698
Above 60	(J) Age	Between 36-40	-1.5159	2.23284	1.000	-8.6075	5.5757
		Between 41-45	-1.6944	2.22228	.999	-8.7525	5.3636
		Between 46-50	-7.2222	2.56607	.134	-15.3722	.9278
		Between 51-55	.4240	2.53208	1.000	-7.6180	8.4660
		Between 55-60	-5.0983	2.80196	.723	-13.9975	3.8009
		Above 60					

anticipated consequences and that this selection by consequences has negative implications for the world and its future unless some vital changes are made. If the client finds the response rewarding the probability of a given behaviour recurring increases and vice versa. In the case of street children negative behaviour, if a woman is successfully helped in raising a street child, she is more likely to repeat the behaviour and to tell other women of her new achievement. The use of positive and negative reinforcement schedules should be applied appropriately to enhance the probability of the occurrence of the desired behaviour. Since human behaviour is learned, any or all behaviour can be unlearned and new behaviours learned in its place. Behavioural counseling is a re-education, or relearning process. Adaptive or helpful behaviour is reinforced, while maladaptive or unhelpful behaviour is extinguished. Through reinforcement principles, clients can be helped to achieve the goals they have set for themselves.

Conclusion

The study reported here has demonstrated that women of different age groups in Botswana are generally negatively disposed towards street children. What this means is that there is dire need for a comprehensive intergenerational relationships approach that can be applied to women and to some extent men so that the phenomenon studied can be effectively handled for psycho-social stability. It might be argued here that getting grandparents, middle parents and grandchildren to interact in the traditional African culture that places emphasis on communal living can be useful in reducing the negative impact the phenomenon of street children is having on our people..

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Structure of Social Network of the Elderly in Delhi

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ABSTRACT

This study presents the nature and importance of social network among the old people. Social network especially for the old has tremendous meanings for their existence. The basic substance of all social networks is persons and their social relations. Understanding the nature and size of social network from where one expects supports to maintain relationships which changed through aging process is becoming prominently important for any gerontologists. Meaningful, genuine and quality of relationships within the domain of social networks considered important for the elderly. To study the welfare of this disadvantaged group of our society, understanding their social world and their networks is imperative. How many people share their concerns with ? What types of people and their importance, content of interaction, frequency of interaction, accessibility and approachability are some of the important issues. Factors influencing the size of social network are gender, marital status, age level, family type, etc. Findings of this study may help social scientists, and care-givers to identify the determinants of the elderly perception of support system which is dependent on social network, demographic variables, social involvement and personality type. This study conceptualizes those three dimensions which determine elderly, perception of social support : (1) willingness of others (members of the society) to listen when they want to talk, (2) level of caring by the fellow members provided to them, and (3) concerns of others to provide support in times of sickness or problematic situations.

Keywords: Social network, Elderly, Gender, Meaning for Existence, Social involvement, Social supports.

Older people often feel alienated, neglected, marginalized, helpless, and ostracized, especially with the gradual decrease in joint family system. Elderly feel secure as long as they perceive that their

family members and friends will support them and come to their rescue at times of needs (Chadha and Van Willigen, 1990; Jamuna and Ramamurti, 1991). Social support has a very important role to play in making the elderly feel wanted and secure. One dimension of social support is the frequency with which individual interact with members of their social networks. The number of interacting social contacts, or persons, that an individual can count upon or approach in times of need, constitutes his social support network. When we think of social network structure, the term is considered as a web of relationships that can be described along such dimensions as frequency of interactions among its members, its density and extensiveness, the reciprocity, durability and intensity of its interpersonal relationships (House and Kahn, 1985; Cochen, 1988). A network represents the totality of individual's attachment some of them could be strong and other weak, some close and continuous, other specialized and intermittent, some contractual and others not (Wellman, 1992). Network can be understood as linking individual to larger social systems (House, Umberson, and Landis, 1988), therefore it can be examined in terms of gender or ethnic homophile indicating the extent to which one's network is coextensive with system of social stratification. Network can also be assessed in terms of its institutional interfaces; i.e., the way in which its composition is made up of relationships from any social religion and so on. The notion of network draws attention outward to surrounding content and social systems, where as supports forms more on the interactional and interpersonal exchanges among selected network members. Although network informs us of the entire complex of attachments and their social and institutional contents, social supports refer to specialized kinds of relationships drawn from the network (Antonucci, 1985).

Gangrade (1988) asserts the importance of using the social network concept for understanding the social life of the elderly. This approach extends the conception of the social world beyond the scope of household to include friends, neighbors, co-workers, and fellow members of organization as well as any other person who is somehow linked to the person. The effectiveness of the network to be assessed both in terms of quality (nature of relationship) and quantity (number of persons and contacts) (Jamuna, 1994; Bannerjee, 1997 and Ushasree, 2000). The number and the quality of interaction have been

seen to have a greater impact on the morale of the elderly, and thereby on their physical functioning.

There are many ways to conceptualize social support network for the elderly as the networks are abstracted from life rather than being constructed theoretically. The basic concept of social networks is more direct than the various network proxies such as social support (Ramamurti and Jamuna, 1991). When we define social network in a typical egocentric mode, we see that networks include both the person's fellow co-residents as well as persons from beyond the household which Gangrade refers as a "multiple linkage group" including coworkers, friends, neighbors, other kin and the persons linked through joint association membership. Networks are important for welfare especially for the disadvantaged group of the aged persons. Social networks in Indian situations provide vitality to social work in managing crisis situations. This should be properly used and strengthened to solve many problems faced by the aged, rather than the advocating the development of institutional programs (Gangrade, 1988).

Social networks structure has a very meaningful and purposeful scope in the study of the elderly social support systems and their day to day activities. The questions that whether qualities can compensate for quantities can only be answered by the understanding about the patterns of their social network structure. A person who has larger social network linking to the community has greater probability to have better treatment, care and supports from members. On the other hand, members of the many traditional societies have intense fear of social sanction in his/her neighbourhood in which he/she lives and worked. The older people with large social support network, Chadha and Van Willigen (1995) found that they reported higher satisfaction than those with small network. Many studies on depressive symptoms (Dean *et al.*, 1992) psychological distress (Arling, 1987), functional impairment (Boult, *et al.*, 1994), and mortality (Boult, *et al.*, 1994; Sabin, 1993) provide evidence for the importance of social network. Shankardass and Kumar (1996) also found that an active support network strongly influenced the social well being of the elderly. And those who had more contact with their family members, neighbours, and friends and also those who had some one in whom to confide, and had a more positive attitude towards living were found happy.

Core Network: Social support network has a variable structure as well as a more intimate, a core network which is very much responsible for the elderly well being. According to Shankardass and Kumar (1996) this core network consisted of two to four people from a much larger network. The larger network is used for searching members of the active network.

This core network is extended to include neighbors, coworkers, friends and other household members.

Rationale of the Study : Among the elderly persons, studies indicated that women tend to have smaller networks (Chadha and Van Willigen, 203). Further comparison for males and females shows similarities and differences. Studies (Malhotra, 1996; Chadha, 1996) found that network of male relatively contains fewer across sex relationships than did the network of the females. They also showed that networks of females had higher number of blood relatives than the males. These differences were not statistically significant. However, there was a significant difference between men and women in the number of non-relatives in their network. Men have more non-relatives in their networks. Chadha, *et al.* (1990) found that the two thirds of the sample of men and women consisted of family members being higher in women's networks. Male and females differ significantly in the number of co-workers present. The network size is more or less stable until late life (Old-Old). The network size of the old-old persons (over 80 years) is reduced and become quite small. A large difference in social support networks is found between those elderly persons residing in old age homes and those staying at homes (Chadha and Mangla, 1991; Chadha and Arora, 1995). The mean network size reported for people living at home ranges from 12-26, while the institutionalized persons have networks consisting of five to six people (Chadha and Van Willigen, 2003).

Widowhood could be disadvantaged for greater role loads resulted from the death of their spouse and to their social interactions. The widowed and single persons had to do the extra work of their spouse. This could restrict them for their social interactions, participation and involvement. Chadha, Aggarwal and Mangla (1990) found that the social network size of married persons is greater than that of widowed and single persons.

Within the elderly community itself, Chadha and Singh (1996) observed that persons living in the joint families have larger social network than those living in nuclear families. No significant difference was obtained between the nuclear males and females, joint family male and females, joint family females and nuclear families males. Clearly the situation of the patriarchal joint families has an impact on social aging. Being the older in the family, the male members showed high social involvement (Chadha and Van Willigens, 2003). Van Willigen and Chadha (1999) found that there was no significant difference in the sizes of networks of people living in nuclear and joint family settings. They speculated that persons in nuclear family settings tend to compensate for having fewer household members in their networks by developing relationships with neighbours, friends, and co-workers. Chadha and Singh (1996) found an interesting split in their study of Delhi elderly men and women residing in joint and nuclear families, with males living in the joint families had networks about 13% larger than female resident of the joint family. Males and females living in the nuclear families had more or less identical size network.

Research Work done on Social Networks in India

Elderly persons are disadvantaged socially and physically which possibly result from their economical and psychological status/conditions. And also for the same reason their support system is reduced. However, there are little empirical researches have been done to understand their social world and its consequences. Some of the available work done are presented here which would possibly give better picture of social world of elderly.

Chadha Aggarwa, and Mangla (1990) in a study entitled social network and aging, tried to locate the problem areas of the older people using network approach, by analyzing the number of network members and reached the following conclusions :

1. Size of social network is more increase for married as compared to their widowed counterparts.
- (2) Size of the social network is more for males as compared to their female counterparts.
- (3) Friendship support is one of the most important factors associated with positive changes among the both married and widowed older persons.
- (4) Two third of the network is consisted of family members. This is more applicable for females than for males in general,
- (5) One of the most significant factors for the support is same sex friends. The results

found that male gender having more male-male relationships and more female-female relationships in the case of the female gender. The cross section relations were found to be among kin. (6) Males and females differ significantly on the number of co-workers present in the network.

Family support was found to be the important factor for the better psychological well being of the elderly. Pinto and Prakash (1991) in their study found that home bound elderly have more advantage than the institutionalized elderly in respect to their daily activities, level of satisfaction, social context and sources of financial support. Many old people complaint about the difficulties they experienced in being dependent on their sons, but insists that the best place for them was with their children and not with relatives or any institution. For old people institutional care has not been considered as a remedy to deal with the problems of aging (Gangrade, 1989).

In another study by Mangla and Chadha (1991) on social network approach in old age : it was found that differences exists between institutional and non-institutional older persons with respect to their size of social network, sex of their network, blood relationships and non-kin relationship. Surprisingly, it was experienced that during the interviews with institutionalized elderly, particularly males, do not interact with other residents of the old age home. Perhaps these are the people in whom a basic needs to behave egocentrically emerges during old age which is held in check during the middle years of life by the societal demands and role expectations. Thus, the essential ingredients of their personality being self-centeredness, institutionalized elderly exhibit significantly smaller social network. On social support network, the non-institutionalized are better in regard to interaction with relatives, friends and neighbours (Chadha, Easwaramoorthy, and Kanwara, 1991).

Chao, Chadha, and Joshi (2004) found among the Naga elderly that there were no significant differences between male and female on their social network.

Chao (2004) also found that social networks were significantly different between the elderly pensioners and non-pensioners, fully supported and independently living, young-old and old-old, and old and old-old, and illiterate and literate, and illiterate and degree holder elderly.

Objectives

1. to identify the role of social support network as mediating in better living of the elderly's, everyday life.
2. to find out the difference between age groups, genders, types of family, and marital status.

Methodology

1. Sample

The criteria for the sample taken for the research were :

1. The subjects were of the age of 60 years and over and residing in the National Capital Region (NCR) of Delhi, India.
2. Absent of cognitive impairment or any other psychiatric disorder.
3. Coherent communication.
4. No severe physical disorders which may be debilitating in nature.

Characteristics of the Sample

	N = 500		
Gender	Male		Female
	277		223
Family Type	Nuclear		Joint
	185		315
Age Group	Young-old	Old	Old-Old
	302	158	40
Marital Status	Married	Widowed	Single
	373	121	06

3. Tools used

Social Support Network Schedule : This schedule was developed by van Willigen and Chadha in 1991. This schedule tries to determine the pattern and size of the elderly person's social support network as they get older. The elderly subjects were asked to tell the names of the people and the frequency with which they meet i.e., everyday, more than once a week, once in week, and once a month. This schedule also aimed to determine the nature of their network which included aspects like sex of the person, members of household, those living in the area, relatives, co-workers, neighbours, friends and servants. The greater the number of people the subject names, the larger the size of network.

Results

1. Graphs

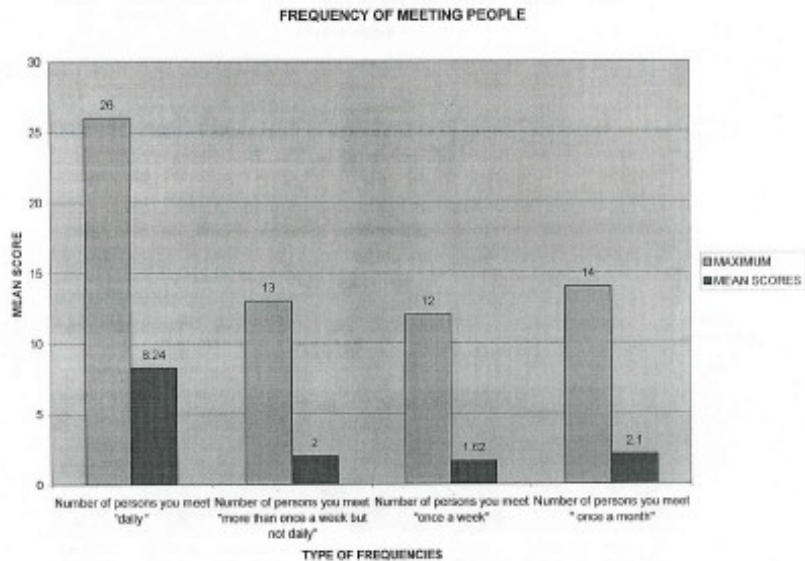


Figure - 1 : Type of Frequencies

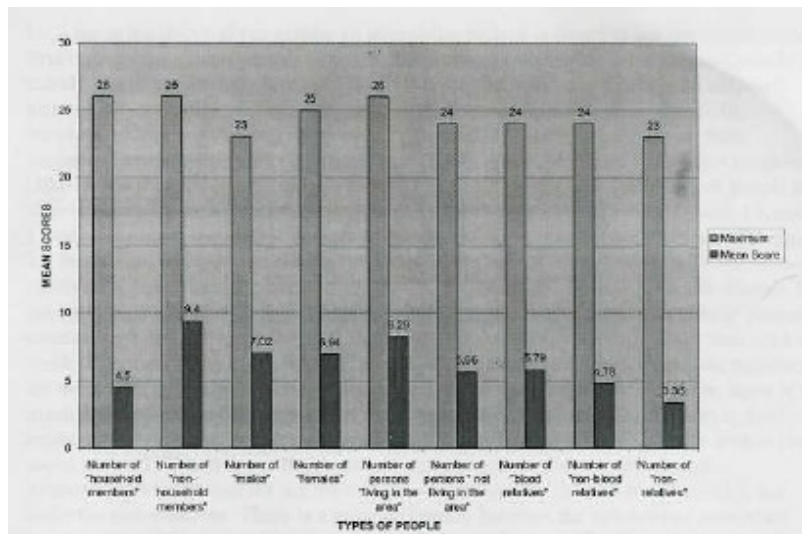


Figure - 2 : Types of People

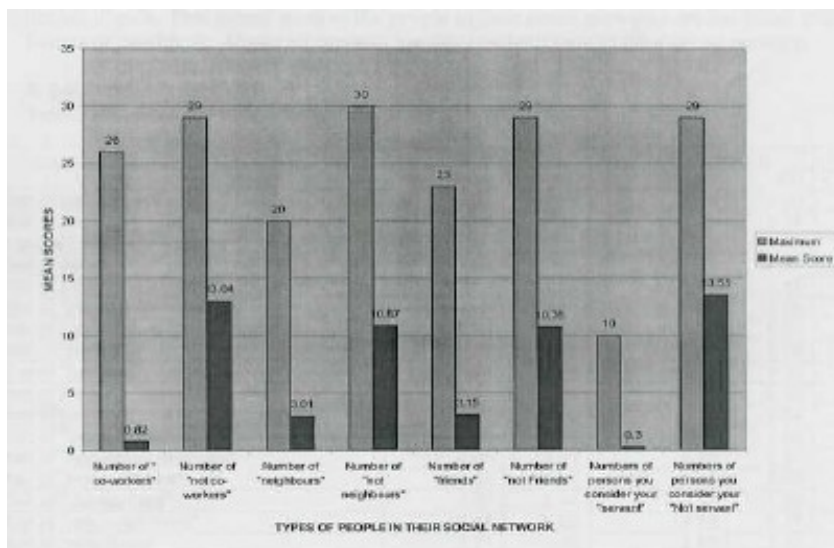


Figure - 3 : Types of people in their social network

Looking at the above given graphs an interesting picture is found for the social support structures of the elderly people in Delhi. The average (Mean score) number of people in an elderly meeting on a daily basis is 8.24. However, the number of people in an elderly meeting held more than once a week, once a week and once a month are invariably between 2.1 and 1.6. These people are largely drawn from household members (9.4) living in the area (8.29), non-co-workers (13.04), not neighbours (10.07), not friends (10.78) and not servant (13.5). The maximum numbers of people in an elderly meets are as follows : Meeting on daily basis-28, more than once a week-13, once a week-12, once a month-14, household members-26, non-household members-26, male-23, female-25, living in the area-26, not living in the area-24, blood relative-24, non-blood relative-23, co-workers-26, non co-workers-29, neighbours-20, not neighbours-30, friends-23, not friends-29, servants- 10 and not servants-29. The number of people in an elderly persons meeting on a daily basis is much larger than the number of people meeting more than once a week but not daily, once a week and once a month categories. Non-household members are more than the household members in the elderly social network. However, there is not much difference between the number of male members and the female members in their network. People living in surrounding the areas are more than the

people not living in that area in their social network. Looking at the relational components in the network circuit, interestingly blood relatives are the maximum followed by the non-blood relative and lastly the non-relatives. There is a large difference between the number of co-workers and non-coworkers, in which non-coworkers are much more than the coworkers in their network. Majority of the people the elderly meets are not their neighbours, nor the friends. Above all servants are most insignificant in their social network.

2. Inferential Statistics

Table-1 : Gender and Social Support Network (N=500)

	Male (N=277)		Female (N=223)		t-value
	Mean	SD	Mean	SD	
No. of persons you meet "Daily"	8.31	4.41	8.14	4.90	0.40
No. of persons you meet "more than once a week but not daily"	1.88	2.15	2.17	2.31	1.44
No. of persons you meet "once a week"	1.52	2.02	1.75	2.34	1.16
No. of persons you meet "once a month"	2.25	2.59	1.90	2.51	1.53
No. of "household members"	4.35	3.42	4.69	3.88	1.03
No. of "non-household members"	9.63	5.69	9.12	5.99	0.98
No. of "males"	8.83	8.83	8.83	3.18	11.52**
No. of "females"	5.21	3.50	9.09	3.50	10.39**
No. of "living in the area"	8.15	4.49	8.47	5.35	0.73
No. of "not living in the area"	5.85	4.89	5.42	5.04	0.97
No. of "blood relatives"	5.69	3.02	5.92	3.68	0.78
No. of "non blood relatives"	4.45	3.51	5.19	3.51	2.12*
No. of "relatives"	3.87	3.96	2.73	3.96	3.41**
No. of "co-workers"	1.07	2.54	0.50	1.89	2.77**
No. of "not co-workers"	12.88	5.68	13.28	6.17	0.66
No. of "neighbours"	3.31	3.48	2.63	2.89	2.34*
No. of "not neighbours"	10.61	5.64	11.19	6.19	1.11
No. of "friends"	3.58	3.56	2.63	2.90	3.22**
No. of "not friends"	10.40	4.97	11.21	6.07	1.63
No. of persons you consider your "servant"	0.19	0.65	0.44	1.24	2.93**
No. of persons you consider "not your servant"	13.74	5.59	13.32	6.04	0.808

** denotes significant difference at 0.01 level

* denotes significant difference at 0.05 level

Table-2 : Age Group and Social Support Network (N=500)

	Young-old (N=302) a		Old (N=158) b		Old-Old (N=40) c		t-value		
	Mean	SD	Mean	SD	Mean	SD	a+b	b+c	a+c
No. of persons you meet "Daily"	7.99	4.67	8.47	4.53	9.18	4.75	1.06	1.51	0.87
No. of persons you meet "more than once a week but not daily"	1.90	2.12	2.19	2.48	2.05	1.95	1.34	0.42	0.35
No. of persons you meet "once a week"	1.45	1.91	1.87	2.54	1.97	2.31	2.02*	1.60	0.23
No. of persons you meet "once a month"	2.26	2.67	1.75	2.34	2.26	2.67	2.02*	0.14	1.07
No. of "household members"	4.38	3.66	4.48	3.44	4.38	3.66	0.29	1.78	1.61
No. of "non-household members"	9.18	5.43	9.69	6.43	9.92	6.23	0.89	0.80	0.39
No. of "males"	6.65	4.16	7.59	4.83	7.52	4.47	2.19*	1.24	0.08
No. of "females"	6.97	4.31	6.64	4.97	7.93	4.93	0.74	1.29	1.46
No. of "living in the area"	8.05	4.77	8.44	5.00	9.53	5.28	0.83	0.79	1.21
No. of "not living in the area"	5.55	4.68	5.55	4.68	5.88	5.25	0.54	0.41	0.07
No. of "blood relatives"	5.61	3.17	5.94	3.41	6.63	4.03	1.03	1.84	1.10
No. of "non blood relatives"	4.52	3.64	5.06	4.14	5.63	4.46	1.42	1.75	0.76
No. of "relatives"	3.40	3.48	3.34	4.25	3.18	3.76	0.18	0.38	0.22
No. of "co-workers"	0.82	2.03	0.73	1.99	1.15	4.34	0.45	0.82	0.91
No. of "not co-workers"	12.70	5.53	13.41	6.36	14.17	6.60	1.23	1.55	0.68
No. of "neighbours"	3.02	3.13	3.17	3.54	2.27	2.86	0.48	1.42	1.48
No. of "not neighbours"	10.56	5.58	10.96	6.39	12.83	5.71	0.68	2.4*	1.69
No. of "friends"	2.88	3.11	3.78	3.52	2.73	3.67	2.79**	0.29	1.68
No. of "not friends"	10.69	5.20	10.42	5.76	12.65	6.30	0.49	2.18*	2.14*
No. of persons you consider your "servant"	0.27	0.98	0.33	0.89	0.47	1.15	0.65	1.23	0.87
No. of persons you consider "not your servant"	13.30	5.47	13.68	6.24	14.93	6.32	0.678	1.73	1.12

** denotes significant difference at 0.01 level

* denotes significant difference at 0.05 level

Table-3 : Marital Status and Social Support Network (N=500)

	Married (N=373) a		Widowed (N=121) b		Single (N=06) c		t-value		
	Mean	SD	Mean	SD	Mean	SD	a+b	b+c	a+c
No. of persons you meet "Daily"	8.10	4.55	8.79	4.87	5.50	4.42	1.41	1.39	1.62
No. of persons you meet "more than once a week but not daily"	2.17	2.32	1.54	1.89	1.50	0.84	2.71**	0.70	0.05
No. of persons you meet "once a week"	1.76	2.23	1.19	1.93	1.67	1.86	2.54*	0.11	0.59
No. of persons you meet "once a month"	2.31	2.67	1.44	2.07	2.33	2.66	3.27**	0.03	1.02
No. of "household members"	4.44	3.62	4.69	3.69	4.67	3.50	0.65	0.15	0.01
No. of "non-household members"	9.85	5.83	8.04	5.58	6.50	6.35	3.06**	1.41	0.66
No. of "males"	7.53	4.51	5.49	3.76	5.83	4.79	4.48**	0.91	0.21
No. of "females"	6.84	4.36	7.33	5.21	5.67	4.76	1.03	0.65	0.77
No. of "living in the area"	8.13	4.71	8.91	5.39	5.83	4.87	1.52	1.19	1.37
No. of "not living in the area"	6.23	5.06	3.89	4.15	5.67	5.61	4.59**	0.27	1.00
No. of "blood relatives"	5.88	3.29	5.66	3.41	3.33	3.08	0.62	1.87	1.64
No. of "non blood relatives"	4.89	3.72	4.47	4.36	4.33	3.61	1.02	0.36	0.08
No. of "relatives"	3.60	3.81	2.61	3.45	3.50	4.59	2.54*	0.06	0.61
No. of "co-workers"	0.85	2.29	0.69	2.29	1.17	1.83	0.69	0.33	0.50
No. of "not co-workers"	13.47	5.73	11.87	6.22	10.00	6.63	2.62**	1.47	0.72
No. of "neighbours"	2.92	3.02	3.32	3.89	1.67	2.34	1.17	1.02	1.03
No. of "not neighbours"	1.36	5.84	9.41	5.78	9.50	5.89	3.20**	0.77	0.04
No. of "friends"	3.34	3.35	2.59	3.19	2.67	2.50	2.16*	0.49	0.05
No. of "not friends"	10.99	5.46	10.16	5.55	8.50	6.32	1.46	1.11	0.71
No. of persons you consider your "servant"	0.25	0.79	0.45	1.36	0.67	0.82	2.03*	1.27	0.38
No. of persons you consider "not your servant"	14.05	5.66	12.16	5.89	10.50	7.423	3.17**	1.52	0.66

** denotes significant difference at 0.01 level

* denotes significant difference at 0.05 level

Table-4 : Family Type and Social Support Network (N=500)

	Nuclear (N=185)		Joint (N=315)		t-value
	Mean	SD	Mean	SD	
No. of persons you meet “Daily”	6.75	3.99	9.11	4.76	5.67**
No. of persons you meet “more than once a week but not daily”	2.25	2.37	1.86	2.13	1.87
No. of persons you meet “once a week”	1.95	2.47	1.43	1.95	2.56**
No. of persons you meet “once a month”	1.96	2.70	2.18	2.47	0.93
No. of “household members”	2.83	3.07	5.48	3.58	8.3**
No. of “non-household members”	10.03	6.51	9.03	5.36	1.86
No. of “males”	6.49	4.76	7.32	4.19	2.03*
No. of “females”	6.42	4.63	7.25	4.53	1.97*
No. of “living in the area”	6.48	4.09	9.36	5.02	6.61**
No. of “not living in the area”	6.39	5.42	5.22	4.61	2.57**
No. of “blood relatives”	4.58	2.89	6.51	3.36	6.52**
No. of “non blood relatives”	4.48	3.54	4.96	4.06	1.35
No. of “relatives”	3.82	4.09	3.09	3.51	2.11*
No. of “co-workers”	0.86	2.05	0.79	2.41	0.37
No. of “not co-workers”	11.96	5.64	13.68	5.97	3.16**
No. of “neighbours”	3.03	3.36	2.99	3.19	0.11
No. of “not neighbours”	9.83	6.11	11.48	5.66	3.10**
No. of “friends”	3.40	3.46	3.01	3.22	1.27
No. of “not friends”	9.44	5.28	3.01	3.22	4.19**
No. of persons you consider your “servant”	0.44	1.27	0.23	0.72	2.39*
No. of persons you consider “not servant”	12.33	5.61	14.27	5.79	3.66**

** denotes significant difference at 0.01 level

* denotes significant difference at 0.05 level

For determining the structure of the elderly social support network, the Social Support Network schedule developed by van Willigen and Chadha was used. This schedule was used to study the size, patterns, and nature and structure of the social support network of the elderly.

From the tables it can be seen that the age factor and marital status do not have a significant impact on the social support structure

of the elderly. When comparison on the basis of the gender was made, the results (Table-1) indicate that male and female elderly persons differ significantly on the numbers of males ($t=11.52$, $p<0.01$), females ($t=11.0$, $p<0.01$), number of blood relatives ($t=2.12$, $P<0.05$), and neighbors ($t=2.34$, $P<0.01$) members in their social support network. The females had more females as friends and males had a greater number of "males". The males also showed a significantly higher mean score for the number of non-relatives, co-workers, neighbours, and friends, whereas females showed a significantly higher mean for servant as part of their social network.

However, no significant differences are found between male and females elderly at any of the significant levels on the number of people meeting daily, more than once a week basis, once a week, once a month, household members, non-household members, living in the area, not living in the area, not coworkers, not friends, and not servants.

Again when compared between various age groups, the results show (Table-2) that there were no significant differences in almost all the dimensions of the social support networks structure. Differences were found only in the numbers of people met once a week ($t=2.02$, $P<0.05$), once a month ($t=2.02$, $P<0.05$), male members ($t=2.19$), and friends (2.79 , $P<0.01$) when compared between Young-Old and Old groups of the elderly. There were no significant differences between the two groups on the numbers of people meeting daily, more than once a week, household members, non-household members, living in the area, females, not living in the area, blood relatives, non-blood relatives, non-relatives, coworkers, not coworkers, neighbors, not neighbors, not friends, servants and not servants.

When Young-Old and Old-Old groups are compared the results indicates that there are no significant differences between the two groups on all the spheres of the social networks except not friend ($t=2.14$, $P<0.05$). No significant differences were found for the two groups in almost all the spheres of social networks such as number of persons meeting daily, more than once a week, once a week, once a month, household members, non-household members, living in the area, not living in the area, males, females, relatives, non-blood relatives, non-relatives, coworkers, not=coworkers, neighbours, not neighbours, friends, servants and not servants.

When various marital status categories were compared with respect to their social support networks the results (Table-3) showed that significant differences were found on the numbers of people met once a month, non-household members, males, not living in the area, non-relatives, not coworkers, not neighbors, not servant, etc., (at 0.01 level), and number of people met once a month, non-relatives, friends, and servants, etc. (at 0.05 level) between the married and widowed. Interestingly no significant differences were found between married and single, and widowed and single at any point of significant levels.

From Table-4, it can be observed that family type also makes a difference in the area of social support network. In almost all the relationship studied in the schedule, it can be observed that the elderly living in joint families have a larger social support network. The two groups differed significantly (at 0.01 level of the significance) on the number of people meeting daily, meeting once a week, household members, living in the area, not living in the area, blood relatives, not coworkers, not neighbours not friends, and not servants, (at 0.05 level) on the numbers of males, females, non-relatives and servants. The mean scores are significantly more in the areas of household members, blood relatives, non-relative, persons living in the area, persons not living in the area, not-servant. The results indicate that the elderly in joint families have more relatives, household members, and neighbours as part of their social support network, where as those living as nuclear families interact more with friends and non-relatives.

Discussion

Good social support networks serve as a feature of social relationships that can be seen in many of the ordinary exchanges of daily social interactions which is becoming prominent in the time of adversaries. Conceptual boundaries of social support and its interrelationship have found its meaning and reality within the people's social relationships. Availability of social supports, its forms and functions are entirely dependent on an embedded context of attachments and affiliation. All social supports may not be from within their networks, but major parts of the supports are necessarily located within the web of their surrounding relationship (Wellman and Wortley, 1990). To study the size, patterns, and nature that consequent as the structure of the social support network of the elderly, it become immanent and imperative to design care giving mechanisms. The

frequencies in which the elderly meeting their known or unknown persons can be considered in the forms of daily, once a week, and once a month etc.

From the t-test scores it can be seen that the age factor and marital status do not have a significant contribution and impact on the social support network system of the elderly. From the results of the study, it was shown that the elderly still have acceptable numbers who can be met everyday. Majority of the people elderly meet are drawn from the household members, both from those living in the area and not living in the area, blood relative, and non-blood relatives not coworkers, not neighbours, not friends, and not servants. An acceptable numbers of people (mean score-8.24) meeting on the daily basis by an individual elderly does not give a grave situational picture of their support networks. However, this high frequency of meeting people on everyday basis can be explained by several factors as far as the conditions in Delhi is concerned. Scarcity of living space where within a hundred square feet of plot lot of people had to stay, possibly prompt the resident to meet more people whether they like or reliably can except help and support. However, when concerning with the type of people, maximum numbers are from not-coworkers, not neighbour, not friends and not servants. This type of network could raise many concerns for the gerontologists since the people in the networks are not either expected supporters and from whom one can easily get help. Whether such frequently meeting people would help them to receive support whereby the elderly perceive them willing to listen to their cause, perceive their presence of caring from the society as a whole and perceive reliably to provide supports in time of sick and trouble.

The comparison on the basis of the gender the result also indicates that males differ significantly from the female elderly on the numbers of male members and female members in their social support network. The females had more females as friends and males had a greater number of "males" members. The males also showed a significantly higher mean score for the number of non-relatives, coworkers, neighbors, and friends, where as females showed a significantly higher mean for servant as part of their social men folks as the bread earners which prompt them to go out more frequently and have a larger social network. For which Chadha, Mangla and Aggarwal (1990) considered the social world of women as 'Inside' and the social world of men as 'Outside'. This also served as another

explanation for significant differences between male and female on non-relative, coworkers and friends in which male elderly have advantage over their female counterparts. Female elderly persons, on the other hand, are more home-bound as traditionally derived in many societies and that could be the reason to have limited interaction with the outside world.

With a consideration for the age categories, the results indicate a significant difference between young-old and old on their meeting with male members and friends. Old aged group having larger number of male members and friends could be the resultant of their affiliation to an association such as Senior citizens welfare associations and unions where members meet at their get together, whereas the younger elderly persons still trying their time to spend at works, and the oldest old group remain to their rooms as their physical health does not permit them to explore and maintain social interactions. The other reasons could be that the oldest old group is 80 years and over, many of their age group members are no longer with them whereby their friends circle has been reduced. On the front of the frequency of meeting people young old has more contacts on once a month basis, where as old group has more contacts on weekly basis. Younger elderly who are still working occasionally could visit their relatives once a months or less or others which could have been the results. On the other hand old age group, as kith and kin visit to their places during weekend may have them advantage over the younger group.

From Table-4, it can be observed that family types also make a difference in the area of social support network. In almost all the relationships studied in the schedule, it can be observed that the elderly living in joint families have a larger social support network. The joint family elderly have better advantage on the number of people meeting daily basis, household members, numbers of males and females members, people living in the area, blood relatives, not-coworkers, not neighbours, and not servants. This explained that the joint family elderly are nurtured by the advantage of having larger numbers of kith and kin at their place. For which their networks spread mainly and having advantage over the nuclear family type elderly on their networks surround their dear and near ones. This type of network possibly provides better chance to give reliable social support.

On the other hand, the nuclear families elderly persons have better advantage over the joint family system elderly persons on numbers of persons meeting on a once a week basis, numbers of people not living in the area, non-relatives, not friends, and servant. This type of network, possibly provides professional supports and social services but may fail to provide the basis to day to day helps of the elderly.

Conclusion

As far as the network of the elderly in Delhi is concerned with respect to the findings of the present study, the situation is not yet under serious danger. But the real concerned should not be the quantitative structure itself but the system of network which is reliable to give support and also the elderly themselves can comfortably expect supports from its members. Gender differences need to be seriously looked into because any patriarchal society with poverty driven status tends to overlook certain basic inequalities in term of services and supports. Age factors with the degenerative nature, carry many disadvantages should be our utmost concerns. Aged with their many negatives, being discriminated and deprived from many ostensible cares and companions even by the many good citizens of the nations. Marital status, as it bound to happen to everyone, unable to maintain good social networks due to various factors including work-loads and social prejudices. Family types as its compositions derived help from many elderly persons to enjoy life at the best. The maximum reliable supports are enjoyed by the joint nuclear family elderly persons. By and large, from the results it can be seen that the age factor and marital status do not have a significant impact on the social support structure of the elderly as in the case of gender and family types.

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Demography of Ageing in India: State and District level Analysis

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ABSTRACT

The population of India is currently moving toward an old age structure and it is certain that there will be rapid growth in the elderly population in the near future. The paper discusses the inter-states and inter-districts differentials of elderly/aged population of India (defined in terms of those 60 and above) based on Census 2001 published by Registrar General of India. The paper also talks about urban-rural differentials, sex differentials, and old-age dependency ratio among the elderly population. According to census 2001, India accounts for 7.4% elderly population i.e., 76.6 million. The highest proportion of elderly among states and union territories are located in Kerala (10.5%) and lowest proportion was found in Dadra & Nagar Haveli (4.0%). The percentage is higher in the southern states (Kerala, Tamil Nadu, Karnataka and Andhra Pradesh), Himachal Pradesh, Goa, Maharashtra, Haryana, Punjab, Uttaranchal and Pondicherry than the Indian average. The evolution of old age structure changes the balance of men and women in the whole population. Sex ratios of older age group are higher in those states. There are 168 districts where elderly population is more than 8%. However, district level analysis show that there are 37 districts in India where more than 10 percent elderly are living there. The quantum of population ageing has important implications for government policies such as pension schemes, old age homes, health care, and economic growth.

Keywords : Aged population, Government policies, Pension schemes, Health care old age homes, Economic growth

The aging of a population is consequence of the process known as demographic transition. Population aging involves a shift from high mortality/high fertility to low mortality/low fertility and consequently an increased proportion of elderly shares in the total population. Consequently, the population pyramid shows the changes in the overall population age structure. The widening of the pyramid base reflects rapid increase in fertility. The shape of the population pyramid will gradually change from a wide base narrow base, to a barrel-shaped form. Generally, according to the composition of its structure, a population could be classified into three types of development: growing, stationary, and declining. As the size of the young cohort declines, the size of old cohort increases, resulting gradual population aging. It is projected that in some countries the elderly population will increase rapidly in the next few decades, with the current 8 percent of the population over age 60 approaching 21 percent in 2050 A.D..

The Indian elderly population 60 and older is currently the second largest in the world (first is China). Demographers in India have made various projections and by international agencies by visualizing the current demographic trends by using various demographic and health indicators and projections are made on basis of certain assumptions. According to wall chart as of 1999, world's 60 years and older population is estimated to be nearly 600 million and projected to grow to almost 2 billion by 2050. At that time, the population of older persons will be larger than the population of children (0-14) years for the first time in human history. The majority of world population will reside in Asia (53 per cent), while Europe's has the next largest share (25 Per cent). Currently little less than one-fourth of the elderly 60 years and above of Asia's population are Indians. It is projected that by 2050, India's elderly will be more than four times i.e., 77 million to 324 million. The pace of ageing in developing countries is more rapid and their transition from young to old structure will be more compressed in time (Population Ageing, 1999, United Nations Division, Department of Economic and Social affairs According to census figures, the proportion of elderly persons in India has risen from 5.6 percent in 1961 to 7.4 percent in 2001, is expected to be 8.9 percent in 2016 (Population projection of India and

States, 1996-2016, RG, India). Currently, the population natural growth rate is declining at a slower rate and the country is in the third stage of demographic transition. It is estimated that by the middle of this century India will have 21 percent of older persons of total (Population Ageing, 1999, United Nations Division, Department of Economic and Social affairs).

In this paper, the trend in population age structure is described with emphasis on the elderly in India. The discussion covers the national population, states, as well as the districts, in order to provide more information about the geographical distribution of the aging population. The paper discusses the inter-states and inter-districts differentials of elderly/aged population of India (defined in terms of those 60 and above) based on Census 2001 published by Registrar General of India. The paper also talks about sex differentials, and old-age dependency ratio among the elderly population. The paper concludes with a brief discussion of the implications of population aging on social and economic development.

Past changes in age structure

Till 1920s the population of India was stable and started growing slowly and gradually. Before the independence of the country, both mortality and fertility level at high levels: the life expectancy was around 32 years (1941-51) and TFR was around 6 live births per woman. The mortality rate declined faster in 1960s, 1970s, and 1980s due to improvement in public health and which led to control of specific infectious diseases. In the 1980s, the family planning program helped to reduce the growth rate to certain extent. Improved sanitation and increased attention to maternal health and childcare services did help greatly to reduce infant mortality. Life expectancy at birth rose steadily and by 1996-2001 life expectancy at birth was 62.4 for males and 63.4 for females (Source: Report of the Technical Group on Population Projections, Registrar General of India, 1996). These changes directly affected the age distribution of the population in the country.

Table 1: *Indices of Age Structure of India's Population in Census*

Year	1961	1971	1981	1991	2001
Total Population (In millions)	439.2	548.2	683.3	846.3	1028.6
Total 60+ Elderly (in million)	24.7	32.7	41.5	55.6	76.6

(0-14) per cent	40.9	42.3	39.9	37.5	35.3
(15-59) per cent	53.4	51.8	54	56	57
(60+) percent	5.63	5.97	6.28	6.58	7.4
(70+) percent	1.96	2.06	2.33	2.51	2.8
Young age Dependency Ratio	76.59	81.66	73.88	66.96	62.18
Old age dependency Ratio	10.5	10.9	11.6	11.75	13.1
Total dependency Ratio	87.13	93.18	85.5	78.7	75.2
Median age	20.49	19.59	20.22	21.58	22.5
Place of residence (Urban) of 60+ (%)	15.13	16.6	18.72	21.88	25.0
Index of Aging	13.7	14	15	17.6	21

For the related indicators for the population in the last 5 Census years are given in table-1. The proportion of people age 0-14 years to the total population has increased from 40.9 percent in 1961 to 42.3 percent in 1971, declined to 39.9 percent in 1981 and 37.5 percent in 1991 and 35.3 percent in 2001. The proportion of working age group 15-59 initially declined until 1971 and then increased to 56 percent in 1991 and slightly increased to 57 percent during 2001. The change in the proportion of aged 60 and older increased throughout from 1961 to 2001 at a lower pace and increased to 7.4 percent in 2001. The decadal growth of elderly is 38 percent whereas decadal growth of general population is only 21 percent. The continuous increase in proportion aged 60 and older signaled the start of population aging in India. The absolute number of 60 plus population in India has increased three fold in last 40 years i.e., from 25 million in 1961 to 76.6 million in 2001. There are 8 million elderly in the age group 80 plus.

The overall median age has also shown a marginal increase. Although both the proportions aged 15-59 and 60 and older to the total population have increased since 1971, the dependency ratio of person aged 60 and older increases from 10.9 percent in 1971 to 13 percent in 2001. On the other hand, during the same period, the total dependency ratio has declined mainly owing to larger reduction in the young age dependency ratio (82 percent in 1971 and 62.08 percent in

2001). Among the elderly the proportion of “old-old” 70+ to the total population has increase a little, but still a large number (29 million) i.e., 2.8 percent in 2001. However, in terms of absolute numbers this group has increased from 8.6 million 1961 to 29 million in 2001. An easily understood indicator of age structure is the ageing index, defined here as the number of people aged 60 and over per 100 children under age 15. Among elderly population in 1971, there are 14 older persons for every 100 children and the ratio has increase to nearly 21:100 in 2001. While growth rate of the total population has declined but the growth rate of elderly population has been increasing consistently.

State differentials among elderly Population

As of 2001, the highest proportion of elderly among states and UTs was observed in Kerala (10.5%) and lowest in Dadra Nagar Haveli (4%). According to 2001, UP has 11.6 million elderly people (highest) followed by Maharashtra has 8.4 million and Andhra Pradesh and West Bengal has 5.8 and 5.7 million respectively. The lowest number of elderly population lives in Lakshadeep (1.4 lakh). Map presentations for the census year 1971 and 2001 are given in figure 1 and figure 2. The proportion elderly residing in various states and UTs is classified into four groups. The states are grouped in the following manner: states where less than 5 percent elderly live, 5 percent to 5.99 percent, 6 percent to 6.99 percent, 7 percent to 7.99 percent. For census 2001, one more group (8 percent and above) is added in addition to other groups to understand the increased proportion of elderly in a few states. The presentation shows that there are only two states namely Punjab and Himachal Pradesh exceeded 7 percent of elderly population during 1971 (figure 1) and 15 states exceeded same percent during 2001. It may be noted that states like Punjab, Himachal Pradesh and Kerala exceeded 9 percent during 2001 census. Surprisingly, elderly population proportion (less than 5 percent) in small states and UTs has not increasing much during last 30 years.

Based on 2001 census data, the overall ageing index in India was 21. However, this measured ranged from 10.8 in Meghalaya to 40.2 in Kerala.

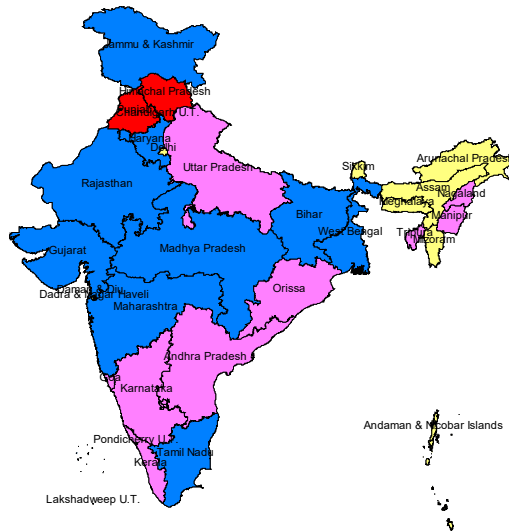


Figure 1: Proportion of 60+ population, Census 1971

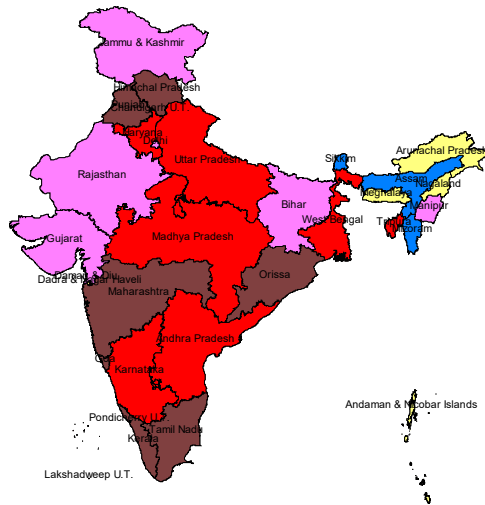


Figure 2: Proportion of 60+ population, Census 2001

Legends :

less than 5



Districts differentials among elderly Population

As indicated in the maps, proportion of elderly displayed at aggregate level may not be same at sub administrative unit i.e., at district level. For planning and policy making it is essential to study the status of elderly at district level. Since, the situation may be different at districts levels. For example, Kerala has highest proportion of elderly population in the country (10.47%), however, if we look at district Malappuram that has 7.27 percent of elderly population (lowest in the state). The frequency distribution of districts by proportion of elders by sex is given in table 2.

Table 2: District level differentials among elderly Population Proportion (60+)

Percent Distribution	Total		Male		Female		Population Distribution	
	Freq.	%	Freq.	%	Freq.	%	Distrib.	%
< 4.99	40	6.75	45	7.59	38	6.41	<1 lakh	46.7
5-5.99	79	13.32	98	16.53	68	11.47	1-2	32.5
6-6.99	143	24.11	188	31.70	122	20.57	2-3	14.3
7-7.99	163	27.49	125	21.08	142	23.95	3-4	4.7
8-8.99	84	14.17	80	13.49	110	18.55	4-5	1.0
9-9.99	47	7.93	31	5.23	58	9.78	5-6	0.3
10.0 & abo.	37	6.24	26	4.38	55	9.27	> 6 lakh	0.3
Total	593	100	593	100	593	100	593	100

There are 168 districts in India where elderly population is more than 8% and half of them (84 districts) have elderly population of more than 9 percent. However, 37 districts out of 593 exceed 10 percent and above of aged population while there is only one state Kerala which has exceeded 10 percent of aged population. Moreover, 55 districts have elderly females of more than 10 percents.

In absolute term, north twenty four and Medinipur have highest elderly population about 7 lakh and the lowest is in north district in

Sikkim (1658 elderly people). Close to half of the districts in India, less than one lakh elderly people are living (table 2).

Table 3: Districts (10% and higher older population) by states

Himachal Pradesh	Karnataka	Kerala	Maharashtra	Orissa	Punjab	T. Nadu
(9.0%)	(7.68%)	(10.47%)	(8.73%)	(8.25%)	(8.99%)	(8.82%)
Bilaspur	Udupi	Alappuzha	Amravati	Jagat-	Hoshiarpur	Erode
Hamirpur		Ernakulam	Bid	Singhapur	Moga	Karur
Kangra		Kannur	Hingoli	Kendra-	Nawanshahr	Namakkal
Una		Kollam	Jalna	para		
		Kottayam	Lathur	Nayagarh		
		Palakkad	Osmanabad			
		Thiruvananthapuram	Parbhani			
		Thrissur	Ratnagiri			
			Sangli			
			Satara			
			Sindhudurg			
			Wardha			

*Figures in brackets are state level percentage of old age population

Table 3 shows that districts under each state have more than 10 percent of elderly population. While formulating policies for older population, it is essential to consider districts in different states mentioned here.

Further analysis reveals that 8 districts of Kerala and 12 districts of Maharashtra, and a few districts of Punjab and Himachal Pradesh have more than 10 percent of older population. Higher proportion of elderly population in those districts may be explained by low fertility or high migration of younger population.

Table 4: Districts (10% or higher elderly female proportion) by states

State	No. of Dist.	Districts
Himachal Pradesh (9.25%)	5	Bilaspur, Hamirpur, Kangra, Kinnaur, Una
Karnataka (8.23%)	1	Udupi
Kerala (11.3%)	10	Alappuzha, Ernakulam, Kannur, Kollam, Kottayam, Kozhikode, Palakkad, Pathanamthitta, Thiruvananthapuram, Thrissur.

Maharashtra (9.73%)	23	Ahmadnagar, Akola, Amravati, Aurangabad, Bid, Buldana, Dhule, Hingoli, Jalgaon, Jalna, Kolhapur, Latur, Nanded, Osmanabad, Parbhani, Ratnagiri, Sangli, Satara, Sindhudurg, Solapur, Wardha, Washim, Yavatmal.
Orissa (8.46%)	5	Balangir, Bargarh, Jagatsinghapur, Kendrapara, Nuapada*
Pondicherry (9.14%)	1	Mahe
Punjab (9.49%)	4	Hoshiarpur, Kapurthala, Moga, Nawanshahr.
Tamil Nadu (8.94%)	3	Erode, Karur, Namakkal
Uttaranchal (7.87%)	2	Almora, Garhwal
West Bengal (7.53%)	1	Kolkata
Total	55	

Figures in brackets are state level percentage of old age female population

Table 4 shows that distribution of elderly females (more than 10 percent) spread across different districts of states. There are 55 districts having elderly females of more than 10 percent of total females of those districts. In the state of Maharashtra alone, 23 districts have more than 10 percent of elderly females. Three-fourths of the districts of Kerala and 65 percent districts of Maharashtra have elderly females greater than 10 percent. Even Uttaranchal (2 districts) and West Bengal (1) have elderly female population higher than 10 percent.

The highest proportion of elderly females (15%) found in Pathanamthitta district of Kerala followed by Sindhudurg of Maharashtra. There are two districts Alappuzha and Kottayam in Kerala and Osmanabad of Maharashtra have elderly female population close to 14 percent. The lowest proportion of elderly females is in the district of Papum Pare of Arunachal Pradesh.

Generally higher proportions of elderly 60+ and 70+ are concentrated in same states. It is seen that there is a high positive

correlation between elderly 60+ and elderly 70+ ($r = 0.95$). States having at least one district with higher proportion of elder population (70+) (more than 4 percent) is presented in figure 3. From the figure it shows that 9 districts out of 14 districts in Kerala and half districts in Himachal Pradesh and one fourth districts of Maharashtra have more than 4 percent of 70+ elderly people living there. Three districts each from Himachal Pradesh and Kerala are unique with respect to more than 5 percent old-old population (70 year and above).

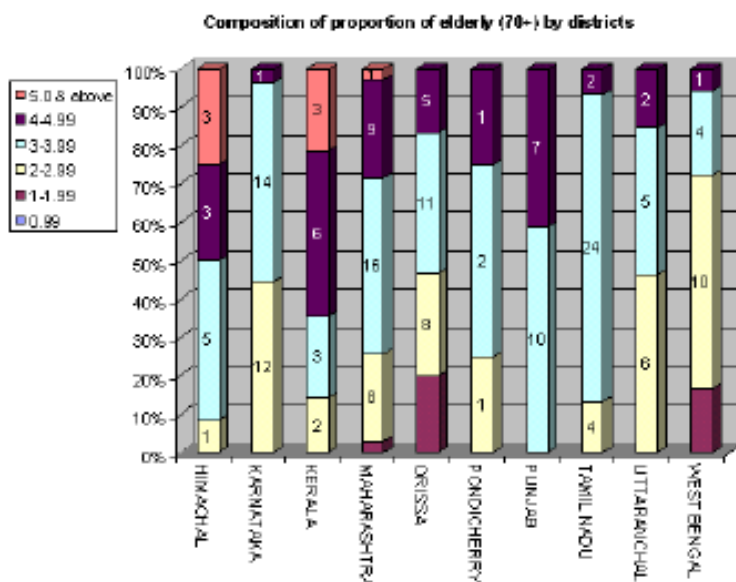


Figure 3: Districts (elderly population proportion 70+) by selected states

A sex ratio is a common measure used to portray a population sex composition. A sex ratio is conventionally defined as number of women for 1000 men in a given population or age category. Sex ratio greater than 1000 indicate more women than men, and sex ratios under 1000 indicate the reverse. In most countries in the world, sex ratio of older ages is above 1000. In some cases, it is much higher too. Women are expected to make up the majority of the elderly population in future. Hence, many of the challenges and problems faced by elderly of today and in essence challenges and problems

faced by older women in future. The imbalance may be due to excess of male mortality and out migration.

Table 5 : Frequency distribution of Sex ratios among elderly persons

Sex Ratio	Age Group					
	60-64	65-69	70-74	74-79	80+	60+
<949	191	77	305	271	245	204
950-999	88	92	62	60	46	79
1000-1049	79	78	47	52	38	69
1050-1099	86	98	48	38	33	58
1100-1149	51	73	50	42	36	61
1150-1199	44	71	26	35	28	57
1200-1249	19	54	30	27	40	34
1250+	35	50	25	68	127	31
Total	593	593	593	593	593	593

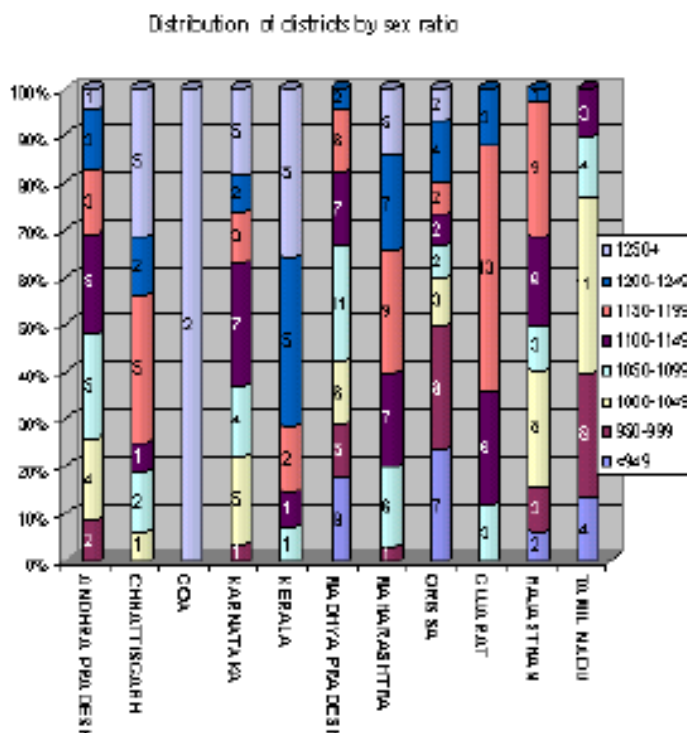


Figure 4: Distribution of Districts by Sex Ratio among 60 plus

District level analysis of Census 2001 show that the districts where, sex ratios favored females, indicates that there are more women than men aged 60 years and over and most likely high proportion of females would be widowed or single. Table 5 shows that there are 283 districts out of 593, where elderly men outnumbered elderly women. The remaining 310 districts have more elderly females than elderly males. Sex ratios among elderly in the age group above 60 and above 80, there are 31 and 127 districts respectively, where more than 1250 elderly females for 1000 males. Eighty plus is much selected age group, given that life expectancy is much lower for both males and females in India. Because in the twilight age, most of females will be without income, they will need support either from their children or the Government.

Figure 4 presents the distribution of districts by sex ratios categories. States are selected for chart on the basis of at least one district having sex ratio of 1250 elderly females and higher by 1000 elderly males. One can hypothesize that higher proportion of older population leads to higher sex ratio favoring to females. From the figure 4, it does not reflect. None of the districts of the state Chattisgarh depicted as of high proportion (>10 percent) of older population. However, 7 districts have (more than 1200 elderly females) out of 16 districts in Chattisgarh. The reason may be that Chattisgarh has a balance sex ratio among general population. Of course Kerala is only state where 10 out of 14 districts have more than 1200 elderly females per 1000 elderly males.

Table 6: Females 1200 and higher per 1000 males (60+)

Andhra Pradesh (1099) [978]	Adilabad Kurnool Nizamabad Srikakulam	Kerala (1247)[1058]	Alappuzha Ernakulam Kannur Kasaragod
Chhattisgarh (1181) [990]	Dantewada Dhamtari Kanker Korba Mahasamund Raipur Rajnandgaon		Kollam Kozhikode Malappuram Palakkad Thiruvananthapuram Thrissur
Dadra & Nagar H (1270)[811]	Dadra & Nagar H	Madhya Pradesh (1047) [920]	Balaghat Mandla
Daman & Diu (1421)[709]	Daman Diu	Maharashtra (1150)[[922]	Aurangabad Bhandara
Goa (1260) [960]	North Goa South Goa		Dhule Gondiya
Gujarat (1149)[921]	Amreli Kachchh Porbandar		Hingoli Jalgaon Jalna
Jharkhand (1005)[941]	Pashchimi Singh		Nanded Nandurbar
Karnataka (1112)[964]	Bagalkot Bellary Dakshina Kannad		Parbhani Ratnagiri

	Gadag Koppal	Meghalaya (957)[975]	Sindhudurg East Khasi Hill
	Raichur Udupi		Jaintia Hills Gajapati
Pondicherry (1222)[1001]	Karaikal Mahe Pondicherry Yanam	Orissa (1022) [972]	Kalahandi Kandhamal Malkangiri Nuapada
Rajasthan (1083)[921]	Ajmer		Rayagada
West Bengal (1047)[934]	Bankura		

Figures in () refers to sex ratio of elderly females and figures in [] are general sex ratio

It shows that general sex ratio is the determinant of higher elderly females in the population. An interesting finding is that there is no district in Gujarat having elderly females less than 1050 per 1000 elderly males. In addition, table 6 reveals that higher proportion of females in the region does not necessarily to have sex ratio favoring females. The highest sex ratio is in the district Diu with 1689 followed by Dantewada of Chhattishgarh 1485 and the lowest is in West Garo of Meghalaya (660).

The old age dependency ratio refers to the ratio of population of age 60 and above to the population in the working ages (15-59 years). The old dependency ratio exhibits an increase in the last decade 1991-01. There are 79 districts, which show old age dependency rate more than 16 percent. The relatively faster increase in the elderly population will contribute to a higher dependency ratio of the population in the non-productive age group. Therefore, responsibility for caring for the elderly will fall either on young wage earners or on the Government. In Maharashtra, 21 districts has old age dependency ratio more than 18 per 100 persons in the productive age group.

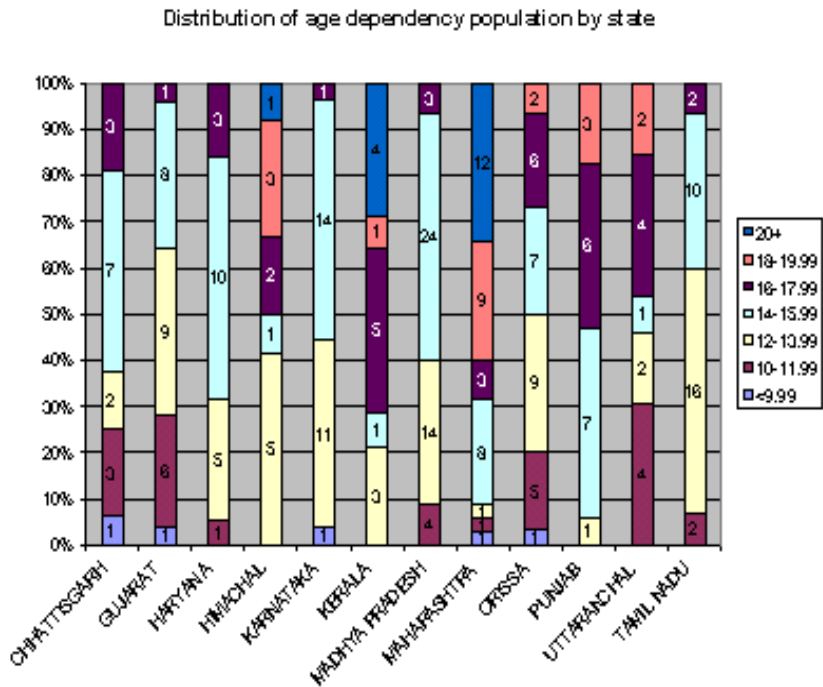


Figure 5: Distribution of old-age dependency ratio by states

Conclusion

The population of India is currently moving toward an old age structure and it is certain that there will be rapid growth in the elderly population in the near future. Taking account of current economy and poverty in the rural areas and urban slum and almost poor social security system, the specific features of the aging population hold propound implications for social and economic policies. Districts where more than 10 percent older people live, districts where sex ratio favors to females, and districts where dependency ratio more than 18 percent need special attention. Only small proportions of retired

people are pension holders and there is no provision for elderly people of unorganised sectors. In the mean time, the support and care of elderly will shoulder by younger generation in their families. Increase in the relative and absolute size of these old-age groups will results in greater burden for the working age population. Due to high rate of internal and international migration due to search of jobs from rural to urban areas, from country to overseas, older persons are affected seriously as it decreases the number of adult members at home. There is need a survey to understand their health in the context of physical, social, mental and spirituality well-being. How the elderly live and coresidence and economic well being of the elderly need to be addressed. Now the current concern of Government needs to be twofold: attention to family welfare program and care for elderly. It was in response to ageing and related isolation and destitution, institution of older persons came into existence. In order to reduce the future burden of dependency, it is suggested that economic participation of women should increase and the retired age to be postponed (Falkingham,1987). In addition, the retired will be given chance to continue employment if they are in good health. Government may think of introducing old age pension and health care for poor old age people.

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Socio Economic Dimensions of Ageing - A Micro Perspective

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ABSTRACT

The objective of the study is to briefly analyse the various dimensions of ageing from a micro economic perspective. This has been done with the help of the case study method, a qualitative tool in research.

Keywords: Security, Loneliness, Satisfaction, Gender, Rural - Urban

Ageing can generally be described as the process of growing old and is an intricate part of the life cycle. Basically it is a multi-dimensional process and affects almost every aspect of human life. Introduction to the study of human ageing have typically emphasised changes in demography focussing on the 'ageing of population'- a trend, which has characterised industrial societies throughout the twentieth century but in recent decades, has become a worldwide phenomenon.

Ageing is basically the result of a two dimensional demographic transformation which is explained by overall declines in mortality and fertility.

This is a dynamic process was first observed in post-industrial European societies in the nineteenth century. The United Nations Conference of Ageing Populations in the context of the family held in Japan in 1994 observed that all developed countries at least one demographic issue in common : population aging which was the inevitable consequence of fertility decline. But although fertility decline is usually the driving force behind changing population age structures, changes in mortality assume greater importance as countries reach lower levels of fertility.

Accordingly to a UN report, the number of older persons has tripled over the last 50 years, and it will more than triple over the next fifty years. The older population is growing faster than the total population practically in all regions of the world and the differences in growth rates are increasing. The older population is growing at a faster rate in the lesser-developed regions and will be increasingly concentrated in the lesser-developed regions.

The basic similarity among people all over the world regardless of culture, colour or class is reflected in the fact that all people grow older and this process of ageing is inevitably accompanied by frailty and feebleness. With increasing age most individuals undergo a biological and physiological decline, which is brought about by factors such as senescence and lifestyle. The results of increasing age can be seen in almost every part of the body. The elderly are also disproportionately subject to emotional and mental problems.

It is also well known now that older adults are an important, growing segment of the population. They are the first to reach their age in great numbers, face a number of problems that may be unrecognised and become a dominant social and economic issues.

The spectacular increase in human life expectancy that began in the mid 1800s and continued in the following century are often ascribed primarily to improvements in medicine. However the major impact of medicines and sanitation did not occur until the late nineteenth century. Earlier and more important factors in lowering mortality were innovations in industrial and agricultural production and distribution, which enabled nutritional diversity and consistency of large numbers of people (Thomlinson, 1976).

Another research concludes, "Physical health; material security and family relationships can be seen as a three legged stool upon which successful ageing is assured. Remove one leg and it all falls down".

The UN Report on Population ageing has noted that "population ageing is pervasive, a global phenomenon affecting every man, woman and child. The steady increase of older age groups in national populations, both in absolute numbers and in relation to the working age population has a direct bearing on inter generational and intergenerational equity and solidarity that are the foundations of society."

From the economic point of view, the report has noted that "population ageing is profound, having major consequences and implications for all facets of human life. In the economic area, population ageing health and healthcare, family composition and living arrangements, housing and migration. In the political area, population ageing can influence voting patterns and representation.

The objective of the study is to briefly analyse the various dimensions of ageing from a micro economic perspective. This has been done with the help of the case study method, a qualitative tool in research.

CS-I

Mr. Das* is 68 years old. He is a retired government high school teacher and has passed the secondary grade teachers training course. He is a widower for the past 10 years and has no children. While in service, he lost his eyesight on account of a severe illness. But he says that even after his illness, he managed to continue working and earning a living without depending much on others. Now his health has deteriorated and he has become very weak. He gets a pension of Rs. 200 per month but he is hardly able to survive with that. He does not have any relatives and since his wife died several years ago, his only support is his friends with whom he stays. Some kind hearted and philanthropic people help him by proving financial assistance for which he is very grateful. He gets a bus travel concession on account of his physical handicap. He does not have any serious health problems, but is very weak and frail, and fully depends on people to help him.

CS-II

Ms. Prema* is 71 years old and is a resident of an old age home for the past four years. She is highly educated and was a university college teacher at Chennai. She is from a well - educated and rich family and has three brothers. Teaching was her only interest so she did not marry, as she was more involved with her career. At the age of 63, she had a very serious fire accident, which made her totally bedridden for the next two years. After a lot of medical care she is now able to move about slowly with a walker. As all her brothers are very busy people with no time to care for her, she was put in an old age home. The home takes care of most of her needs and also her daily necessities. She feels that she gets better care here than at home. She is totally independent economically and has absolutely no problem with money. However, she is forced to adjust to the conditions of the old age home, and she has no privacy or independence. Though most of her needs are satisfied, she sometimes feels very depressed and lonely.

CS-III

Mr. Mani* is a retired railway employee and is presently 78 years old. He has four sons and a daughter. His wife died 23 years ago. He is now staying in a city with one of his sons. He finds his retired life quite enjoyable. He spends his time taking walks and reading religious books and is also currently involved in writing a book. He has studied upto high school and joined the railway as a clerk. He now gets a pension of about Rs. 4300 and also free railway concession and medical facilities. He suffers from high blood pressure and also has problems with his teeth due to which he cannot eat his favourite food sometimes. He greatly enjoys being with his grandchildren and feels loved and cared for by his family, his children and grandchildren. He is very happy with life.

CS-IV

Ms. Gita* is about 75 years old. She is a spinster who lives alone with her servant in an independent house in a small town in Kerala. Ms. Gita began to feel old when she entered her seventies. Physical disabilities and the lessening of faculties made her feel that old age had come. Earlier she could do everything herself, specially gardening which is her main hobby, but she began to develop osteoporosis (fragility of the bones). Three years ago she had a fall in a hospital where she had gone to visit a friend, which caused a fracture of the leg primarily due to osteoporosis. She counts herself lucky not to have fallen at home. But she had a lot of trouble due to this and had to undergo physiotherapy. She has a servant who is very efficient. Her nephews and nices are always there to help her. She gets pension of Rs. 4500 from the telephone department where she worked as a supervisor. She says that her pension is enough as long as she is not hospitalised. Loneliness is terrible problem. She gets few visitors. Who would come to see me she asks. She is a graduate in philosophy and is informally trained in music. Ms. Gita says that she has nothing to look forward to, no joys, no sorrows, but adds that she is much better off than many others. The only thing she regrets is being a spinster. But her cheerful nature and her view of life and the joy of listening to music keep her going.

CS-V

Mr. Sankaran* is 65 years old, and works as a shop assistant in a stationary shop. His son-in-law owns the shop. He did not have any fixed employment any time in his life, but for the past seven years has

been working in the same shop. He is married with one son and one daughter both of whom are currently well settled. He says that his children stay close by and that he is “very happy” with them. Basically he lives on the income that he gets from the shop. Otherwise he does not get any kind of benefits from the government. He suffers from acute arthritis. But this does not prevent him from carrying out his daily activities and his work. He is quite happy with his life and does not feel the strain in anyway.

CS-VI

Ms. Leelamma* is 84 years old and a widow. She has one son who is working as a peon in an institution. Ms. Leelamma is uneducated and was an ‘ayah’ in an institution for almost fifty years. Recently the institution where she was working decided to send her away as she is too old to work. They also decided to give her a good sum of money for her loyalty. However, her son took matters into his own hands and insisted that the money be put in his name. At this point Leelamma was given the choice of living in an old age home, but she prefers to stay with her son in spite of his shabby treatment. She says that her daughter-in-law ill - treats her, but she prefers to live with her son rather than live in an old age home.

The case studies presented here are presented as a qualitative tool of analysis. Each case study shows the specific problems that a particular category of the aged may face. There are different categories of elderly. We see that there are three factors that affect the well being of the elderly : Physical security, Emotional satisfaction and Financial security

Physical security : physical security relates to the satisfaction of physical needs such as food, shelter and clothing. It can be seen from the given case studies that though this is an important factor, it is not necessarily the most important factor.

Emotional security on the other hand seems to play a more important role since the lack of physical needs is compromised by the attitude to life, which plays a very important role in the overall satisfaction of the elderly.

Financial security on the other hand seems to be the least important of the three.

Though we see the importance of certain factors over others, it can be noted that the socio economic conditions of the aged to a great extent affects the conditions of the aged. With changes in technology and science, there have been changes in the traditional family set-up. The breakdown of the joint family, migration, changes in the attitude towards parents, changes in lifestyle and work environment have all affected the way people view the elderly and how the elderly view themselves. Fewer and fewer families stick on to the traditional joint family system. The concept of a one-child nuclear family where both parents go to work is a familiar norm in most modern societies. In many developing countries, this norm is slowly changing the traditional family network, where the joint family was the best social net for the elderly in terms of care and support. While the joint family network took care of all the needs of the elderly, the changes that have occurred in the social and economic dimensions have greatly altered the care and support given to the aged.

The case studies described here are presented as a qualitative tool of analysis. Each case study shows the specific problems a particular category of the aged may face. While some factors like loneliness, emotional stress or mental satisfaction cannot be measured in real quantitative terms, we can see how important these qualitative factors are in shaping measurable factors like marital status etc. and hence in the analysis in the socio economic profile of the aged. One point that can be observed about the three factors influencing the aged. It can be seen that emotional security is neither influenced by physical well being or economic factors but is completely independent in determining the well being or the level of satisfaction of the aged. Specific rural-urban differences and also gender differences can be seen even at the micro level. While we see that the level of education to some extent influences the financial status of the elderly what is more important is how the elderly view themselves. Differences with gender also can be seen from the micro level which itself is influenced by various economic and social factors like education, marital status and financial factors.

The concept of old age homes seems to be more and more relevant from the point of view of the aged. How the elderly views these old age homes is also another important feature. While some people consider the old age homes as 'the only choice' for some others it is considered as the 'last choice'. Many others do not

consider the old age home as an option at all, but prefer staying with their kith and kin, no matter how they are treated. The concept of old age homes seem to be the only option in an age where traditional social systems are breaking with increasing consumer culture and the breakdown of human values. While people have become more individualistic and self-centered, the elderly are becoming increasingly sidelined in this fast moving world. Their roles in traditional family systems are no longer valued the way it used to be.

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Aging and Gerontology in the Context of Women in India

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“Experience, insight and knowledge come with age. It does not need to be depressing”

- Dr. Barbara Gillogly

“One must never, for whatever reason, turn his back on life”

- Eleanor Roosevelt.

ABSTRACT

This article is an attempt to highlight the general problems facing the aged Indian women, with special reference to the changing family structure, social norms and life styles. Many of the aspects mentioned are not given serious consideration nor have been the subject subjected of detailed research. Probing deep into these problems and finding feasible solutions are of prime importance for a healthy India.

Keywords: Aged women, Family structure, General problem, Life style.

Gerontology and geriatrics are relatively new fields of study in India. Old age problems may not have been acutely felt in a society where joint families were the norm and parents, grandparents, uncles and aunts and cousins stayed together or close by, forming an integral part of the family unit. There was a distinct hierarchy and division of labor, followed strictly by each member. The elders were respected and obeyed. However, the fast changes which came in the society, along with changing family structure and educational reforms and living standards, during the last quarter of a century have affected the aging population everywhere, and, especially in India, where earning members have migrated to cities and to foreign lands. In such cases, the elderly parent (s) is forced to live alone or shift to the house of their children in the cities, where they find it difficult to get used to the new conditions. The children and grandchildren often adopt the city culture and norms, which is not to the liking of the grandparents; leading to arguments and tension in the families.

Some of the major factors that contribute to these changes can be listed as follows:

1. Increase in life-span and the consequent increase in the population of senior citizens.
2. Decrease in family size (two-children norm) and change in family structure (nuclear families).
3. Urbanization
4. Relocation from rural to urban settings.
5. Reduced social contacts and isolation of family units.

Aging women, mostly from middle class families, living in cities with their married sons and who are dependent financially feel these effects more acutely than those living in rural areas in joint families and extended families. But very little attention has been focused on this aspect.

Effect on aging women:

A positive interaction, where the grandparents adjust with the changing conditions and contribute positively to the family, will be beneficial to the older and younger generation alike. They take care of the grandchildren, help the daughter-in-law in the daily chores and advice in critical situations. The children and grandchildren, in turn, care for the older people, looking after their well-being and comforts. There is mutual understanding, love and respect among the generations.

But in a majority of cases, such a harmonious co-existence does not occur, especially where the daughter-in-law is earning and contributes to the family budget and where the older persons are financially dependent.

Three types of negative effects are found: physical, psychological and social.

Physical

Elders develop an awareness of their declining physical abilities when they start developing health problems. The senior citizens of today were born before independence and have been brought up in a society where women had a secondary position and were tutored to sacrifice their comforts for those of the family (husband, parents-in-law and other members of the husband's household, children, grandchildren). They are in the habit of suppressing their feelings and

are reluctant to discuss their health problems. Moreover, fatalistic views lead to the acceptance of their conditions as a part of the natural order of things. They may develop a negative attitude to health, personal needs and life in general. Often heard reactions are 'I have reached the end of my sufferings, there is nothing to be done as this body has to perish', 'why waste money on this old decaying body' and the like. Even when they are very sick, they do not take proper rest or follow the medication schedule.

Psychological

Feeling of insecurity/redundancy: This is especially prevalent in widows and those whose children are not living with them. If the children are financially supporting, they are worried about helpers exploiting them and may grow suspicious. Since many of them are not educated or have never controlled their finances when the spouse was alive, feel that others are cheating them and even develop fear for their life.

Lack of purpose: This is seen in women whose life has been centred on that of the husband. When the husband dies, they lose the motivation to continue living and lose the will for doing anything positive that prolongs their life.

Feeling of being ignored/depression and loneliness: In traditional joint families there is hierarchy and respect for the elders and their opinions. But in nuclear families, where the older people are looked upon as simply dependents with no useful role, they may not be consulted or included in the family discussions or policy decisions. This gives them a feeling that they are not wanted and are a burden on the children. This leads to depression.

Feeling of loneliness: In nuclear families, where both spouses are earning members, and the children are going to school, the grandmothers are left alone for long times, without much to do at home. Even when they are home, the children and grandchildren are busy with their own work/TV, etc. that they find little time to spend with grandparents. This gives a feeling of loneliness to the elderly. Men may find ways to engage their time by joining clubs and other past time, but women are often confined to the house without much social contact. This complicates their condition and may lead to severe depression.

Resentment against dependence: For women, who had a free access to the husband's purse and was controlling the expenditures of the household, dependence on the son and his family for every need may be painful experience. If she has to ask her daughter-in-law for expenses, she may find it difficult to accept the situation and may develop resentment towards this type of arrangement.

Feeling of being exploited: In nuclear families, where both husband and wife are employed earning members, the grandmother may be left to do the cooking and taking care of grandchildren. With declining health, she may find it difficult to do these chores to the satisfaction of the younger members, and, sometimes, the latter may not appreciate her traditional ways. This can also lead to resentment and also to developing a feeling of being exploited.

Psychosomatic syndromes: Loneliness, resentment and depression can lead to physical symptoms and the elder persons may develop chronic illnesses like pains and aches, breathlessness, etc. Sometimes these symptoms may be construed by younger members as an attention-seeking tactic and ignored, which can lead to more suffering on the part of the elders.

Feeling of deprivation: The older women start blaming the deficiencies in them for their problems, like lack of higher education, inability to converse in English, ignorance of the mannerisms of city people, etc.

Social

Inability to cope with changing values and life styles: The traditionally trained women, when relocated to cities find it difficult to understand and adjust with the new milieu. They also find the ways of the younger generation distasteful, e.g. style of dressing, social interactions, parent-children interactions, etc. They may compare the values of their youth with present trends and become overcritical of the freedom and activities of younger people, especially in urban settings.

Inability to mix with people and social isolation: The women coming from rural upbringing may find it difficult to intermingle with city-bred women and feel uncomfortable in the social circle. They may develop an inferiority complex – lack of higher education, unable

to communicate and to maintain a conversation, etc. – hence feel socially isolated.

How to cope with these problems:

In many western countries there are old age homes and social security programs for the elderly, the family paying for the care of the elderly. This type of arrangement is still in its infancy in the Indian cities. In Sweden, the informal care of the elderly is extensive and is mainly provided by the family and friends. In India, such an arrangement predominates in the rural set-up, where joint family structure exists and families interact socially, but is fast disappearing in the case of nuclear families and urban settings where space and time are limited.

Some suggestions for improving the condition of the elderly women are outlined:

Physical: Health awareness programs should include regular check-up and timely detection and treatment of illness. This needs the full co-operation of the elder and the younger members. Often the problem comes from unwillingness on the part of the elderly to discuss their symptoms and impatience and lack of understanding on the part of the younger people. The younger members may also ignore the complaints of the older women as baseless. There should be family discussions at frequent intervals, e.g. once a week, where the elders are encouraged to talk about their problems without the fear of being ridiculed. The younger people should have the willingness to listen and understand the problems and take remedial measures – arrange for the medical check-up and treatment, if needed.

Psychological: Mutual understanding between the elder members and the younger co-habitants have to be nurtured and each one has to develop respect for the others' position in the family. Children should be taught to speak politely and with respect with the older members. The son/daughter/daughter-in-law can make it a point to include the elder members in the discussion on common matters of the family and seek their advice, so that they do not feel ignored and will get a feeling of participation and purpose. They can be asked to do small chores, without involving heavy work.

Grandchildren should be encouraged to spend time with the grandparents/ granduncles every day and play with them. They should be allowed to interact freely.

Social: It is natural that people who have been brought up in a traditional society will be subjected to cultural shock when shifted to the modern society/urban settings, with changing values. This is especially true with respect to their relation with the third generation (grandchildren born and brought up in cities). Both grandparents and grandchildren can take rigid attitudes, without trying to understand the others' point of view. Here it is the duty of the middle generation to explain to both the necessity of some give-and-take policy and compromise, so that a harmonious existence can be made possible.

The retired persons will have more time at their hands to engage in the way they want. This could be used in a constructive way to reduce boredom, loneliness and increase daily activities. It will be interesting to take up hobbies like reading, gardening or social activities (visiting orphanages/hospitals, participate in group activities like AIDS/cancer awareness programs/pulse polio vaccination/family planning, etc.), knitting, painting, etc. which will keep the body and mind engaged and will give a feeling of fulfillment.

They may also join in community programs like religious activities, charity and fund-raising for social causes, community kitchens for deprived children, etc.

Adjusting to old age

It is necessary to develop a positive attitude towards aging and accept facts about the changes associated with the process, and willingness to accept and adjust to the changing trends in the Society. Developing a healthy attitude can reduce the negative impacts and help in adjusting to the physical changes. According to Dr. Gillogly, "It is important, as we grow older, to have a good social network, to exercise, to have an active mind, and to stay engaged at all levels".

Crime and Older People in Kolkata

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ABSTRACT

The increasing incidence of crime against the aged in a metropolitan city like Kolkata is a matter of serious concern, an ominous trend that is likely to grow with the rising numbers of rapidly ageing citizens. They are the city's most vulnerable people-defenceless, ignored by their families, and forgotten by the society at large. This paper tries to seek the factors responsible for the increasing incidence of crime against the elderly in Kolkata, of late, and also discusses on the mechanism of protection and at the same time, emphasizes the role of a family in the security of elderly person.

Key words: *Crime, Older people, Society, Security.*

Case 1: 71 years old marwari lady murdered in her Alipore flat in August 2004. Key suspect: her domestic help.

Case 2: 87 years old widow strangled in her Lake Gardens home in September 2004. With her sons settled in the US and her three daughters married and living in Siliguri, Agartala and Nasik, she lived with a maid. Prime suspect: her maidservant.

Case 3: 60 years old Barware widow murdered at Neonatal Apartments in Adipose in December 2003. Arrested: The domestic help. He killed her and fled to Harebrain village in the Sunder bans with ornaments and cash.

Source: Hindustan Times, Kolkata

These three cases with uncanny similarities- all three victims were aged 60 years and above lived alone and were soft targets of greedy and ruthless domestics. Such brutal crimes against the elderly bring into focus the plight of lonely and helpless senior citizens in

Kolkata. More than 10 percent of Cokato's populace, or about 80 lakh people, are in the 65- plus age group. Many have been abandoned by their children while others prefer not to stay with their children due to various reasons. The uncertainties of old age weigh them down; some even commit suicide, unable to bear a sequestered existence, forgotten and forsaken by society. (Sunday Hindustan Times, April, 24, 2005).

There are 70 million people above the age of 60 in India today, and this number is going to rise to 177 million by 2025 and 324 million by 2050. One of the many problems faced by elderly citizens, particularly in urban areas, is the fear of crime. Thus, coping with old age is becoming increasingly difficult now a day in metropolitan city like Kolkata.

Surveys throughout the world have shown consistently that persons over 65 are likely to be victims of crime than younger age groups. Elderly people are more vulnerable to certain crimes and fall as a prey for it (Thilagaraj & Priyamvada, 2002). Studies by criminologists in the West show that many older persons are reluctant to go to the police to report crimes against them for fear of reprisals. This makes them especially vulnerable to re-victimization (Sen, 2004). Research also indicates that the elderly endure far greater fear for their safety than is warranted by their actual victimization rates.

Grey Fact Sheet

- 15% of Kolkata's senior citizens have none to care for them.
- 85% of the above have been abandoned by their children.
- 70% of the aged in Kolkata are unhappy.
- Percentage of destitute widows is one of the highest in

Kolkata.

Source: Indian society for Welfare of senior Citizens.

Why are Aged the 'Targets'

Rapid industrialization, urbanization and advances in medical technology have brought about major changes in the social structure of Indian society. The centuries-old joint-family system and village community disintegrated, and with it collapsed the safety net of family support system and thus problems of the uncared aged have been

impinging on the welfare agenda of the State. The rural elderly never actually retire. They not only work as long as they physically can, but they are respected and their advice is sought depending on their socio-economic status. Irrespective of their productive capacity, by and large the elderly still play an important role in influencing the younger generation and in upholding social norms for maintaining social relations, although not in the same way as in the past. Age, traditionally, was considered synonymous with wisdom, experience, values, and every parent would spend a fortune on the upbringing of a child in the fond hope that the grateful child will look after the parents in their old age. In the modern technological world the younger generation tends to believe that the expertise and the wisdom of the elderly is inadequate. Fractures in the joint family system and commonly owned property, urban migration, shortage of accommodation in cities and alternate individualistic cultural norms have all contributed to sharply eroding family care of the aged which increases the risk of violence against them.

Following are some of the key factors that have mainly contributed in the rise of the crime against elderly in recent times in Kolkata:-

❑ Lack support system

The support systems that used to exist in the past have all but disappeared with the break up of joint family system. Even 20 to 30 years ago, the elderly in Kolkata were much better off than today. They had the extended family to take care of them. Also, what needs to be understood is that most of the aged people do not really need other to look after them- they just need company, sympathy and very often, someone like their grandchildren to look after. Their needs are simple and basic as revealed in the survey done by a city based NGO *The Indian Association for Retired Persons (IARP)*.

❑ Lack of physical space

The upward spiral in real estate prices and the dwindling size of habitats in the city have played a large role in the sad plight of the aged. There is just no space in apartments, even the upscale ones, to

accommodate one's parents. They are, thus, forced to stay alone. In many cases, the elderly are not deliberately neglected by their children, but are forced to stay separate, since there is no physical space for them in their children's homes.

❑ **Selfishness and Intolerance among young generation**

Growing selfishness and intolerance among the young is a major factor behind the "old and lonely" syndrome. Many young women, soon after moving in with their in-laws, insist on setting up home separately with their husbands. In many cases, the new *bahu* has caused rifts between her husband and his parents and has been primarily responsible for the break-up of the family. But that is only one side of the story. There are several daughters who look after their parents despite having an able brother to do the job. It is the erosion of the family system that is to be blamed.

❑ **"Too dependent on" and "too friendly with"**

Psychologists studying cases of crime on elderly feel the elderly often become "too dependent on" and "too friendly with" domestics. Because of their inability to live on their own, they are forced to employ domestic help without first verifying their antecedents. This makes them vulnerable to attacks by criminals and other species of confidence tricksters.

Elder Abuse—It's A Crime

The World Health Organization's World Report on Violence and Health, the first comprehensive report of its kind to address violence as a global public health problem, describes the abuse of the elderly as '*the hidden face of violence*'. And violence against this segment of society is likely to grow, given the rapidly increasing numbers of a graying population.

It's hard to believe, but elder abuse can happen anywhere—at home by family or friends or in a nursing home by professional caregivers. Many people don't think of elder abuse as a crime—but it is. In addition to physical harm, abuse can include taking financial advantage, neglecting, sexually abusing, or abandoning an older person. Most abuse involves verbal threats or hurtful words. It only

rarely involves weapons or causes physical injury beyond minor cuts and bruises. If someone you know is being abused, or if you need help, remember:

- You can help yourself and others by reporting the crimes when they happen. If you do not report a crime because of embarrassment or fear the criminal stays on the streets. Reporting abuse is a moral as well as legal responsibility in most states.
- Contact your local Police Station for help.
- If you have been hurt, go to a doctor as soon as possible. Even though you may not see anything wrong, there is always the possibility of internal damage.
- Contact a lawyer. He or she will assist you in any legal action that needs to be taken.
- Plan for your own future. Arrange a health-related power of attorney or have a living will so your family knows your wishes for the future.

Protection of the Aged

In our society, unfortunately, the elderly have become a far too easy target for criminals and abusers of the world. Whether living alone or going about daily lives, the elderly are viewed as helpless and easy victims, a shameful way for them to have to live their lives. It seems that the elderly must barricade themselves behind locked doors, or become an instant victim just by going out to the grocery store or even walking in their own yard or neighborhood.

But it doesn't have to be this way. There are ways to ensure a happier and safer life for our elderly, if we carefully consider their lives, their vulnerabilities, and the threats that may consume their lives.

Here is a simple checklist of things an elderly person or family member might consider, to decrease the likelihood of becoming a victim:

- ❖ Always travel with friends or family when shopping, taking long trips, or even going outside for a walk. Even taking a good guard dog may deter criminals from approaching.
- ❖ Don't go out at night, especially alone. Avoid dark and unpopulated or isolated locations. Use security guards for escorting you to your car out in the parking lot, during the day as well as at night
- ❖ Consider taking in a boarder, if you have no one else who can live with you. Just use your judgement, and even get help in checking people out before you let them move into your home.
- ❖ Install extra home security measures. Use locks, alarms, chains, and other means.
- ❖ Don't give out your personal information over the phone, and never buy anything over the phone. Always request the caller to send you information in the mail. Often times, if the offer isn't legitimate to begin with, the caller will tell you the offer is only good for that moment over the phone. No offer is worth that risk. Even if you receive information in the mail, take it to someone you trust, so that together you can evaluate it and decide how much of a risk or scam it might be.
- ❖ Have someone call and/or come by to check on you on a regular basis. Just make sure someone always knows where you are and how you are doing.
- ❖ Carry a cell phone with you, especially when out on long trips. Have this means of emergency contact, should you have car trouble or run into some suspicious looking person.
- ❖ Shred all of your documents before tossing them into the trash. Sifting through garbage is a full time activity for many crooks. Just imagine what information you may be unknowingly giving them in the seemingly harmless papers you discard. Do strangers need to know your social security number, bank account number, phone number, or any other personal or private information? Even a harmless letter you wrote, then re-wrote, to a friend or loved one, can give a stranger just enough information to deceive

you into letting them into your life. What do most of us do with discarded personal letters that we have re-written? They usually end up in the garbage, crumpled, yet intact.

- ❖ Don't allow strangers into your home. If you are expecting a repairman or some delivery, have someone you know and trust be there with you. Also, don't leave your valuables lying out in plain site, even if you have someone there with you. It would be very easy for a dishonest person to check out your home and be quite tempted by the site of a purse, wallet, or jewelry casually lying about. Don't give them the chance to see what you have. Put temptation out of their reach.
- ❖ Have some outside activities to keep yourself active and alert. Take a class, join an exercise group, or learn a new skill. You might even want to consider taking a self-defense class or some other lesson that could help you navigate your elder years. Don't let yourself stagnate and become isolated and alone. Bring others into your lives, those friends and family you trust.
- ❖ If you are out alone, and attacked, stand your ground and make lots of noise. Scream, holler, and even jump up and down! Do anything to get anyone in the vicinity to see or hear you. If the attacker only wants your purse, unless you have your life savings in there, give it up. It isn't worth the threat to your life, is it? In fact, you might want to get into the habit of streamlining the items you carry along with you. Leave the personal items at home, anything with personal home or account information. Carry only the necessities you need on any given outing. Don't make it easy for thieves. But don't be afraid to make a scene, either. Just use good judgement.
- ❖ Take part in a neighborhood watch program. Just make sure you know the neighbors who will be watching your own house! Get to know your neighbors. Cultivate new friends and learn to rely and trust one another. Watch out for each other, and don't be afraid to get involved. If you see a crime taking place next door, all you have to do is pick up your phone and call for help.

- ❖ Don't be afraid to speak out after an attack. Even if an attacker threatens to come back and do you bodily harm if you report it, chances are, the attacker will come back on his own, if he so chooses. It will make little difference if you speak out or not. Better not to be a victim multiple times. Let that first time be the last time. Call the police. Speak out in any neighborhood meeting or social club or gathering. Round up the other elderly folks in your area, and learn how to protect yourselves. There is strength in numbers. Let the criminal elements in your area know they won't be dealing with only one helpless elderly person. Let them know that a group of committed and determined people will be waiting and watching.
- ❖ When traveling, if you have car trouble on a deserted stretch of road, try to stay with your car. Sometimes that may not be possible, but it is usually advisable. If someone comes along to offer help, talk only through a slightly open window. Don't give anyone the chance to get into your car with you, or to get you out of your car. Ask the other driver if they would go to the nearest phone and call for help. This is where carrying your own cell phone can be a lifesaver.
- ❖ If you buy, or are given, a new television, stereo or other expensive item, don't simply throw empty boxes in the garbage or leave them out on the curb. This is an open invitation to all who pass by that this house now has something of value to offer a thief. If at all possible, shred the box so that any writing on the outside of the box will not be easily noticed. And, if you have other ways to use the boxes, recycle them into new storage containers for your home.

Take whatever precautions necessary to protect yourself and your home. Learn from the experts, and attend seminars or workshops on home security, self-defense, or lessons on phone scams. Do whatever you need to do to educate yourself on every way possible to protect yourself from becoming a victim.

And don't let your fears cause you to barricade yourself in your own home, living in fear and isolation. Get out and enjoy life. Just

train yourself to be alert to your surroundings and to whoever may be in close range of you. Don't be an easy target. Look self-assured and confident. Let any potential criminals know that you are fully aware of their presence, and that you refuse to be anyone's victim. Let people around you know that you are in control of your own life, and that you will not give in to some human creature's need to control you, or take advantage of you.

Usually, if you take every possible precaution, chances are you will not become someone's victim. None of us can ever fully guarantee ourselves of this, but we can make it much harder for someone else to take advantage of us. Many times, just noticing people around us, looking and acting self-assured and confident, will be enough to make potential threats shy away. Most criminals want only easy targets. It is far too difficult to go after someone who might make a commotion or who might fight back, anything that draws attention to the thief and his activities.

Take back your life and live it to the fullest. Be self-confident and assured, and let the rest of the world know who you are.

Measures taken by Police:

Sometimes law enforcement officers who contact the senior citizens are young and have little experience of working with the elderly. In the US, some police departments have created special positions called the law-enforcement gerontologists. They deal with the crime and abuse-related problems of the elderly and explore opportunities for the latter to contribute to crime-prevention programmes. By developing a rapport with the elderly, the officers identify their problems and then recommend ways to minimize the risk. They also alert the senior citizens about crimes being committed against the elderly.

In Japan, the elderly have been singled out for special outreach by the police. Police officers regularly telephone older citizens who live alone to check on their well-being. They observe "silver days" when policemen drop in at the homes of the elderly. Particular efforts are also being made by the Japanese police force to draw them into crime-prevention organizations.

Some of the initiatives by the police in India too deserve mention.

- ❖ The Mumbai police, with the help of non-governmental organizations like Dignity Foundation and Agni, have embarked upon programmes to prevent crimes against senior citizens. Under these programmes, officers visit the houses of senior citizens staying in the areas under their jurisdiction on a regular basis. There is also an Alert Citizen Watch scheme launched by Mumbai police, encouraging the people to report crimes against senior citizens and the dangers of any crimes they might be exposed to.
- ❖ Delhi police have also embarked upon innovative programmes to create a sense of security among senior citizens. Under this scheme, schoolchildren are motivated to visit senior citizens on weekends to share their problems. The results so far have been encouraging. However, Delhi police's Servants Verification Scheme is going through a rough patch — the attempts to get information from other states on servants working in middle-class localities in Delhi have drawn a blank. Residents are also reluctant to get their domestic help verified as they feel that the latter would feel insulted and leave.

The Delhi Police in collaboration with Help Age India came up with the various schemes for the protection of older persons. These include: -

1. Identification of senior citizens,
 2. Monitoring of visitors and phone calls received by them,
 3. Emphasis on safety measures like neighbourhood distress alarms, the magic eye and safety chains, and
 4. The registration of plumbers and electricians.
- ❖ The Kolkata Police had issued a directive to 48 police stations across the city to collect details of domestic helps engaged by families in order to keep a record of servants with the Criminal Records Section at the police head quarters. The idea was to run background checks on all servants and maintain a database of

their personal details and photographs, so they could easily be traced when required.

- ❖ **Help the Aged Persons Scheme** formulated in 1998 where policemen required to make a home visit at regular intervals to instill a sense of security and help them with outdoor chores like paying bills. The scheme could not be made operational because of administrative problem.

Conclusion

Perhaps *community policing*, with an emphasis on face-to-face contact, may give the elderly their only access to help. For it is evident that the elderly need police protection to savour the golden years of their lives. But 'family' is the place preferred by older persons in their twilight years. In families, the old lead a dignified life and make efforts at self-actualisation. They enjoy their independence and the prospective life of their children and grand children. It may also be noted that there are older persons still heading the household and supporting their kin. The generation gap is wide that the economy has moved from primary to tertiary level due to the marked achievement in education. However, it is social dynamics that changes the parent-child relationship and the family formation variables. The relations changed from a humanistic to a mechanistic style when families changed from joint to the nuclear set up. Joint families of traditional Indian set up respected aged members while nuclear families do not include older parent. This change in family structure isolated older persons or forced them to depend on some one else (may be the institutions) for physical protection. This paves the way not only for dedignifying of older persons but also for violence and abuse. It is the family care that needs to be enriched for a better social set up for the older persons, rather than propagating institutional care. The four components to be considered are: the elderly, the young generation, the community and society. All the four component need to work to ensure family care. Older persons need to understand that the situation has changed from their days. They should be brought to a level wherein they accept and adapt to the changed world.

The blocks for the youth towards the care of older persons are physical, psychological and financial. The physical constraints are the need of the older person for personal support. The main psychological factor is that the aged don't adjust fast to new conditions. In addition, the youth must be able to protect the older persons financially. Among these, the first factor needs a more careful analysis. A solution may be seeking the assistance of relatives or any other person. Often, it is the community that keeps an eye over the do's and don'ts of its members. Here in the case of care of older persons also, the community norms could be enriched to better family care. Gradually, a social set up could be created to have a family life for the older persons. Even though there are risks, do not let a fear of crime stop you from enjoying life. There are things you can do to be safer. Be careful and be aware of what goes on around you.

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Book Review

Gettin' Some Age on ME : Social Organization of Older People in a Rural American Community By
John Van Willigen. Kentucky, The University Press, 1989. (pp. 188)

The book is based on an empirical research conducted on aging in a rural American county-Kentucky. In fact, aging is a multifarious phenomenon and cannot be understood in terms of a single dimension, such as physical, social, economic, cultural or psychological. Physical changes of course, are inevitable with the advancing age, but the intensity, extent and speed of these changes may vary with the type of life style prevails in a social, cultural and climatic conditions. The author has rightly observed that most of the research on aging has been conducted in urban areas all over the world in general, and in America particular. Such a gap in this research area motivated the author to carry out this study in a rural community.

While introducing the research framework, in the first chapter, the author has made it very clear that the research is concerned with the study of social life of aged in a community. To study social life a broad framework has been presented. Such a framework encompasses "individual cognition, community structure and historical processes" (p.3). To study the social organization the author preferred the technique of social net work. While presenting each of the concepts used in this study the author has tried to present the usage of these concepts in other research and the sense in which he has used them. For example, the author observes that "Social gerontology is less social than psychological" (p.10). And after a few paragraph on changing focus of research in social gerontology he shows his present occupation as "I am concerned with the relationship between age and social organization as well as the characteristics of social organizations as changing institutions in a synchronic and diachronic comparative frame work". Such presentation no doubt reflects the author's current knowledge in the field but blurred the research focus in the sense that social and psychological dimensions cannot be dichotomized.

The second chapter deals with the ethnography of Ridge County an area in Kentucky i.e. the location of the field. The author presents the social ecology of the place, which includes the physical features, topography and geological characteristics, water supply, type of houses, details of population, crops, religious and economic and political life and the social security available for older people. Thus author has introduced the field in a comprehensive way to provide not only the present status of the life pattern but also the changes taken place over time and concluded that “ Ridge county retains many of the attributes of older days in spite of the substantial change”. (p.55). The author succeeds in “demonstrating some of the relationships that exist between society and sectors of culture”

The chapter on data collection provides the detailed methodology followed in gathering the required information. The ethnographic information is recorded through participant observation carried out by the author and his colleague. They used the key informants, interviewing them. For historical reconstruction both oral testimony and local newspapers were used. The other method employed in this study was network analysis for which the author developed the Kentucky Exchange Network Inventory that directly measured ‘active, personal, truncated networks’ through self- reports’. Both the methods used in this study are known in Anthropology and sociology, however, the present author has tried to overcome some of their limitations that have been reflected in the subsequent analysis of the data.

The collected data have been subjected to different analyses. The author has presented the analyses in subsequent four chapters. The interview data of a sample of old persons revealed many interesting facts related to their farms, families and home places. Examples of some of the findings are in order: “The introduction of new technology often represents a dilemma for older farmers. As farmers age they are able to invest less time in maintenance. For farm housewives the demarcation between working life and retirement is especially vague. Large proportion of the social relationships and interactions are between kin or affected by kinship”. Similarly the analysis of the net works revealed that the network size increased up to the age of 69 and then declined. The analysis also revealed that “as

the network size increased the percentage of kin decreased. When people get sick and seek care, network links are activated. There was strict segregation of male and female roles”.

A separate chapter has been devoted to the Network exchange. Author finds culturally appropriate categories of exchange. For example, reciprocal provisions of meals, gift giving, care giving, work sharing, borrowing and lending are some of the practices observed in the community. This has been brought out very clearly that due to changing conditions some of the exchange practices are decreasing. The relationship between age and exchange network complexity showed a curvilinear relationship. In nutshell these findings suggest that any agriculture based rural community would observe such exchange network where return may not be considered strictly in economic terms, rather the members would consider exchange a social or moral duty.

The last chapter titled as “ Old Friends and Perfect Strangers” in fact is a summary of the total research findings. The author has drawn some additional inferences from the foregoing analyses. For example the old people should not be considered as only dependent as they are important sources of “social support”. Also such descriptive research on social aging may provide an empirical base for a comprehensive theory of aging. Along with the changes taking place almost in all the rural communities the life of older people is becoming extremely difficult. I think the author has rightly concluded that “ the old tend to become strangers in their own community” (p.158). To reduce this negative effect, perhaps, the religious institutions can play a major role in developing a social network, where old may not perceive them selves as strangers.

The above description of the book warrants us to conclude that the reported research in this monograph is quite exhaustive and very carefully conducted. Moreover comparisons of the findings with similar studies have added to the quality of monograph, which I hope is very useful for the researchers in this area.

(Uday Jain)

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