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Original Research Article

A study of impairment and disability among elderly and its effect on health-related quality of life

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ABSTRACT

Background: Ageing is generally defined as a process of deterioration in the functional capacity of an individual that results from structural changes, with increasing age. Although old age is not a disease in itself; the elderly are vulnerable to chronic diseases like cardiovascular illnesses, cancers, diabetes etc. leading to impairment and disabilities affecting the health related quality of life of the elderly (HRQOL), which has become an increasingly important outcome in public health research. The main aim is to estimate the common impairments and disabilities among elderly and its effect on their health-related quality of life.
Methods: In the community based cross-sectional study, among 171 elderly (more than or equal to sixty years of age) selected from the field practice area of Urban Health Centre of a tertiary care center, Goa, through simple random sampling technique, the data was collected using a pre designed structured questionnaire eliciting previously diagnosed health related conditions, SF-36 HRQOL questionnaire and a detailed general examination. Data was analysed using Epi Info version 7.00 statistical package and various tests of significance were used.
Results: Of total of 171 elderly, 56.14% were impaired. The HRQOL and domain scores decreased with increasing age with lower mean scores in females than males (p=0.039). Age, marital status, three generation families, absence of co-morbidities, impairment and disability, education, occupation were significant favorable influences on the HRQOL in (total and domain scores), role of physical domain being the most commonly affected.
Conclusions: The increasing population of elderly more so the female elderly population, the emergence of double burden of communicable and non-communicable diseases, presence of impairments and disabilities severely affects their HRQOL.

Keywords: Elderly, Impairment, Quality of life

INTRODUCTION

Ageing is a normal, inevitable, biological and universal phenomenon, and it affects every individual irrespective of caste, creed, rich and poor. It is the outcome of certain structural and functional changes that takes place in the major parts of the body as the life years increases.[1] Ageing is generally defined as a process of deterioration in the functional capacity of an individual that results from structural changes, with advancement of age. It is not merely a matter of accumulating years but also a process of "adding life to years, not years to life." It concerns each and every one of us-whether young or old, male or female, rich or poor-no matter where we live.[2]

Two thirds of the world's older persons live in the developing regions and their numbers are growing faster there than in the developed regions.[3] India alone has

around 100 million elderly at present, and the number is expected to increase to 323 million, constituting 20 per cent of the total population by 2050.[1] In India about two-thirds of the elderly population live in villages and nearly half of them in poor conditions.[4]

Although, old age is not a disease in itself; the elderly are vulnerable to chronic diseases (diseases which are insidious in onset, such as cardiovascular illness, cardiovascular attacks (CVA), cancers, diabetes and musculoskeletal and mental illnesses). These chronic illnesses lead to impairments and disabilities, which affects the health-related quality of life of the elderly.[5] In India, the elderly people experience two types of medical complications: communicable and non-communicable diseases.[6]

Quality of life (QOL) for an elder person has become increasingly important as an outcome in public health research. Health and QOL are inter-linked. The World Health Organization (WHO) has defined health as a dynamic state of physical, psychological, social and spiritual well-being and not just an absence of infirmity and quality of life as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns".[6,7] The WHO definition of QOL has a broader perspective and includes physical health, mental state, level of independence, social relationships, personal beliefs and their relationship to salient features in the environment.[2]

Goa not only features among the top five states having the highest percentage of elderly (60 years or more) to the total population, it ranks second with an elderly population of 11.2 per cent, as per the Census 2011.[8] There is a need to highlight the medical and socio-economic problems that are being faced by the elderly people, and strategies for bringing about an improvement in their quality of life also need to be explored.[9]

On reviewing the studies carried out earlier, it was noted that a lot of data especially on health profile of the elderly has been generated by various states in India and the quality of life assessment has also been attempted to a certain extent.

However, data pertaining to health problems, disabilities and quality of life of elderly residing in Goa was scant. This work may serve as a baseline and also would be helpful in formulation of health promotional programs and interventions for elderly people in this field practice area of the Urban health Center.

The overall aims and objectives of the study were;

- To estimate the common impairments and disabilities among elderly
- To determine the effect of impairment and disabilities on the health-related quality of life (HRQOL) of the elderly
- To determine certain other associated factors affecting their health-related quality of life.

METHODS

The study was conducted in the community from the field practice area of Urban Health Centre of Goa Medical College at St. Cruz, Goa which caters to a population of around 21,000 living in 6500 households. A community based cross-sectional study design was adopted for studying the impairments and disabilities of the elderly and their health-related quality of life. The data collection for this study was done from May 2016 to June 2016.

Inclusion criteria

- All individuals more than or equal to 60 years of age were included in the study.

Exclusion criteria

- Individuals below 60 years of age
- Those participants who were not willing to or were unable to give information due to any reason.

Simple random sampling technique was used for sample collection. The households in the study area were visited in a random manner and elderly people if present and fitting the inclusion criteria were identified and included in the study if consenting. To work out the required sample size the following equation was applied [$N=Z^2$ P (1-P) / e^2], where N is the required sample size, Z is the confidence interval (1.96 for 95% confidence interval), P is the prevalence and e is the standard error. Considering the prevalence of health problems among this age group to be 50%, with 95% confidence interval, and 15% standard error, the sample size obtained was 171.

Study tools

General questionnaire

A self-designed, pre-tested, structured questionnaire was used for information on previously diagnosed health related conditions and for tobacco and alcohol consumption.

Health related quality of life questionnaire

The Short Form-36 version 2 (SF-36v2) questionnaire was used to assess health related quality of life. This instrument has 11 questions with 36 items, giving this the name of SF-36. The items are scored on a 3-point or 5-point Likert scale. These 36 items have been divided into eight domains named physical functioning (PF), role physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role emotional (RE), and mental health (MH). If more than 20% of the data was missing from an assessment then the assessment would be discarded.

General examination

General examination was done to assess the state of sensorium, orientation, pallor, icterus, cyanosis, clubbing and edema. Vitals like pulse, blood pressure and respiratory rate were assessed. Ophthalmic and ear examination was also carried out to assess hearing loss by the tuning fork tests and for presence or absence of cataract respectively.

The data was collected by house to house visit. Informed and written consent was taken from participants before initiation of the study. The eligible subjects who agreed to participate were interviewed personally at home and their socio-demographic data and data pertaining to the illness/disease status of the elderly was obtained. Subsequently, their symptomatology was noted and a general physical examination was carried out. The health-related quality of life (HRQOL) of the elderly was assessed by SF-36 version 2 survey. The status of tobacco or alcohol consumption was also enquired from the participants.

The present study did not impose any financial burden to the patients and did not have any invasive procedures. The institutional ethics clearance for the study was also obtained.

Scoring of SF-36 survey was done with the help of SPSS software and the template provided by Ware et al for this purpose.[10] Appropriate statistical methodology like percentages, student's t test, chi-square test, Kruskal-Wallis H test and ANOVA was used to test for significance of the findings. Data was analyzed using Epi Info version 7.00 statistical package. A p value of <0.05 was considered to be statistically significant.

RESULTS

A total of 171 elderly constituted the study population, of which 69 (40.35%) were males and 102 (59.65%) were females. Out of the total subjects, maximum was in the age group of 60-69 years amongst both males and females i.e. 31 (44.93%) and 55 (53.92%) respectively. There was consistent decrease in the number of subjects with advancing age in both the sexes (Table 1).

Of the total, majority of the subjects were currently married i.e. 106 (61.99%) whereas less than 1% were divorced. However, the number of widows were 60 (58.82%) while only 4 (5.8%) were widowers (among the males). With respect to educational status, 32 (18.71%) were illiterates but more so amongst the females i.e. 26 (25.49%) as compared to only 6 (8.70%) males.

Table 1: Distribution of study subjects according to the socio-demographic profile.

Characteristics		Males (n=69)	Females (n=102)	Total (n=171)
		N (%)	N (%)	N (%)
Age (years)	60-69	31 (44.93)	55 (53.92)	86 (50.29)
	70-79	27 (39.13)	32 (31.37)	59 (34.50)
	80 and above	11 (15.94)	15 (14.71)	26 (15.20)
Marital status	Married	65 (94.20)	41 (40.20)	106 (61.99)
	Divorced	0 (0)	1 (0.98)	1 (0.58)
	Widower/ widow	4 (5.80)	60 (58.82)	64 (37.43)
Education	None	6 (8.70)	26 (25.49)	32 (18.71)
	Primary	23 (33.33)	39 (38.24)	62 (36.26)
	Secondary	26 (37.68)	29 (28.43)	55 (32.16)
	Graduate	11 (15.94)	8 (7.84)	19 (11.11)
	Post-graduate	3 (4.35)	0 (0)	3 (1.75)
Occupation	Household work	5 (7.25)	82 (80.39)	87 (50.88)
	Service (Pvt./Govt.)	6 (8.70)	2 (1.96)	8 (4.68)
	Worker	4 (5.80)	1 (0.98)	5 (2.92)
	Farmer	11 (15.94)	0 (0)	11 (6.43)
	Business	8 (11.59)	2 (1.96)	10 (5.85)
	Retired	33 (47.83)	12 (11.76)	45 (26.32)
	*Unable to work	2 (2.90)	3 (2.94)	5 (2.92)

* due to severe disability.

As far as occupation was concerned, majority i.e. 82 (80.39%) of the females were engaged in household activities whereas 3 (2.94%) of females were unable to work. Majority i.e. 33 (47.83%) of the males had retired from work whereas 2 (2.90%) of males were unable to work due to severe disability (Table 1).

As seen in Table 2, 27 (15.78%) subjects (males:31.88% >females:4.9%) currently consumed alcohol and 20 (11.7%) subjects (males: 20.3%>females: 5.9%) currently consume tobacco. Almost all were having the habit for more than ten years.

The health-related quality of life (HRQOL) was better in males in all domains except social functioning wherein it was slightly more i.e. 69.04 in Females and 67.42 in Males. The HRQOL pertaining to the other domains namely physical functioning, role physical, role emotional, bodily pain, general health, vitality and mental health were better in males as compared to females as depicted in the Table 3. The mean total SF-36 score for all the domains in Males was also higher (59.44) than in females (53.63).

Table 4 shows age-wise distribution of disability wherein 49 (56.98%), 36 (61.02%) and 11 (42.31%) of subjects had impairment in the age group of youngest old, old old and oldest old respectively.

Table 2: Gender wise distribution of study subjects according to alcohol and tobacco addictions.

Addictions	Male (n=69)	Female (n=102)	Total (n=171)
	N (%)	N (%)	N (%)
Alcohol*	22 (31.88)	5 (4.9)	27 (15.78)
Tobacco#	14 (20.3)	6 (5.9)	20 (11.7)
Both	4 (5.80)	1 (0.9)	5 (2.9)
Nil	29 (42.02)	90 (88.23)	119 (69.59)

*chi square test- p≤0.0001; #- p=0.004.

Table 3: Sex wise distribution of study subjects according to domain scores of HRQOL.

Domains of HRQOL	Males (Mean±SD)	Females (Mean±SD)	Total (Mean±SD)	Significance
Physical functioning (PF)	63.33±26.57	53.38±27.32	57.39±27.38	0.017
Role physical (RP)	51.44±41.76	39.54±41.96	44.34±42.17	0.052
Role emotional (RE)	61.33±42.63	52.60±43.86	56.12±43.45	0.251
Bodily pain (BP)	64.13±17.20	57.03±21.92	59.89±20.39	0.072
General health (GH)	53.33±16.79	50.46±16.37	51.62±16.55	0.313
Vitality (VT)	49.96±15.48	46.27±15.24	47.76±15.40	0.203
Social functioning (SF)	67.42±16.76	69.04±15.49	68.39±15.99	0.525
Mental health (MH)	64.60±15.93	60.71±18.04	62.28±17.28	0.125
SF-36 score*	59.44±17.51	53.63±17.83	55.97±17.88	0.039

*ANOVA test.

Table 4: Age wise distribution of study subjects according to presence of impairment/ disability and health transition.

Characteristics		60-69 years (n=86)	70-79 years (n=59)	80 years and above (n=26)
		N (%)	N (%)	N (%)
Impairment or disability	No impairment or disability	13 (15.12)	5 (8.47)	1 (3.85)
	Impairment	49 (56.98)	36 (61.02)	11 (42.31)
	Disability	24 (27.91)	18 (30.51)	14 (53.85)
Health transition in last one year	Better	16 (18.60)	6 (10.17)	3 (11.54)
	No change	60 (69.77)	48 (81.36)	15 (57.69)
	Worsened	10 (11.63)	5 (8.47)	8 (30.77)

Table 5: Age and sex wise distribution of study subjects according to mean Sf-36v2 QOL scores.

Age (in completed years)	Males	Females	Total
	Mean±SD	Mean±SD	Mean±SD
60-69	64.81±16.97	59.69±17.49	61.54±17.38
70-79	59.95±16.75	49.64±14.80	54.36±16.42
80 and above	43.09±10.36	39.90±15.68	41.25±13.53

The number of subjects complaining of worsening of health status is also depicted. 8 (30.77%) of oldest old, 5 (8.47%) in old and 10 (11.63%) in the age group of young old subjects complained of worsening of health status in the last one year.

Table 6: Distribution of SF-36v2 HRQOL domain scores w.r.t impairments/disabilities.

SF-36v2	Impairment/ disability status			P value
	No disability/ impairment	Any impairment	Any disability	
Physical functioning (PF)	73.94±31.38	56.87±26.05	52.67±26.55	0.004
Role physical (RP)	72.36±39.87	41.75±42.37	39.28±39.55	0.009
Role emotional (RE)	64.90±45.10	56.23±44.14	52.96±42.05	0.541
Bodily pain (BP)	67.76±16.87	60.98±19.01	55.35±22.90	0.066
General health (GH)	61.31±16.23	51.58±16.63	48.39±15.49	0.019
Vitality (VT)	60.00±14.24	46.30±15.69	46.11±13.54	0.001
Social functioning (SF)	71.05±16.69	69.27±16.41	65.98±14.96	0.348
Mental health (MH)	68.47±18.66	63.20±16.67	58.60±17.33	0.015
SF-36 score	67.47±20.65	55.77±16.98	52.42±17.09	0.007

Morbidity profile of the subjects revealed that, out of 171, majority i.e. 99 (57.89%) were hypertensive and 97 (56.72%) had anaemia, followed by dental problems in 94 (54.97%), cataract in 80 (46.78%) and diabetes mellitus in 63 (36.84%). Further, 26 (15.20%) were having senile deafness, 24 (14.03%) suffered from joint pain, 19 (11.11%) had CVS conditions, 15 (8.77%) had dyslipidemia and 4.09% had asthma. There was preponderance of female subjects as far as the morbidity's vis hypertension (p=0.351), anaemia (p=0.718), cataract (p=0.475), joint pain (p=0.035), dyslipidemia (p=0.559) were concerned. 145 (84.79%) of the study subjects had more than one morbidity.

The relationship of age with HRQOL suggests that HRQOL worsened as age increased. Males had continuous decline in HRQOL scores with advancing age which was statistically significant across the age groups (p=0.001).

However, the females had lower score since the beginning of old age, and there was statistically no significant difference in HRQOL scores of old-old (70-79 years) and oldest old (80 and above years) (Table 5).

The HRQOL scores of elderly without any disability or impairment, of elderly with impairment, and of elderly with disability is depicted in Table 6 above. Independent of impairment and disability, the most commonly affected HRQOL domains were Role Physical, General Health, and Vitality.

However, with the impairment or disability, the most commonly affected domain in this elderly population was Role Physical, followed by vitality. Two least common affected domains were Social Functioning and Mental Health.

The elderly without any impairment or disability had very high scores (67.47±20.65) in comparison with those who had any impairment or disability (55.77±16.98, 52.42±17.09) respectively. This trend was similar in all the domains. Impairment affected all the domains of elderly health, and the presence of disability resulted in further decrease in HRQOL scores (Table 6).

DISCUSSION

In this paper we have made an attempt to study the impairment and disability among elderly and its effect on health-related quality of life.

In our study, 50% of the elderly were in the age group 60-69 years, and the proportion of elderly had decreased as the age advanced. This trend is similar to other studies wherein the proportions were almost similar, a study by Goel et al, who found 47.2% of their subjects between 60-69 years, 37.8% in 70-79 years, and 15.0% in 80 years and above of age.[11] Generally, as age advances, population faces mortality which results in majority as young old population and diminishing oldest-old population.

The gender distribution in our study is almost similar to that reported by Lahariya et al, where about 44.5% of subjects were males and 55.5% of subjects were females.[5] Females have more life expectancy hence they tend to outnumber the male geriatric participants. Almost more than half of the respondents who were interviewed were from three generation families (51.46%), while 42.69% were from nuclear family. Various studies like Padda et al, Lena et al and Qadri et al have brought out similar findings.[2,4,12]

History regarding addiction revealed that 6.3% were currently smokers, 15.78% currently addicted to alcohol and 5.4% were currently addicted to tobacco chewing. Study among the urban community by Warbhe et al, had 9.1% current smokers, 0.9% were addicted to alcohol and 10% were addicted to tobacco chewing.[13]

It was observed in our study that more than half i.e. 56.14% of the study subjects were impaired whereas only 11.11% had no disability or impairment. Similar findings are present in a study conducted by Lahariya et al, where about 48.5% subjects had some form of impairment and only about 28.5% subjects had no disability or

impairment.[5] Also, as the age advanced the percentage of individuals with impairment or disability increased which is similar to the trend observed by Lahariya et al, in his study.[5] This may be attributed to the fact that the elderly suffer from chronic diseases as the age advances.

A total 71.93% of respondents reported no change in health status while almost similar i.e. 14% and 13% showed improvement and worsening of the health in last one year respectively. Also, as the age advanced, a greater number of respondents reported worsening of health status.

This finding is different from the trend observed in a study conducted by Lahariya et al, where about 50.00% of respondents reported worsening of health in the last year and 44.5% respondents reported no change in the health status.[5]

This may be due to the fact that most of the health reasons are chronic in nature, compliance to treatment advised and care provided may have resulted in at least maintenance of the health status with no deterioration.

It was observed in our study that hypertension was the commonest morbidity, with more than half of the population suffering from it (57.89%), followed by anemia (56.72%), dental problems (54.97%), cataract (46.78%) and diabetes mellitus (36.84%) respectively.

The present study revealed that males had a better health-related quality of life in all domains (except social functioning) than their female counterparts which is similar to that observed in a study by Lahariya et al, where males had a better HRQOL than females.[5] It could be due to more number of widows while males had a spouse who could provide care and support. Also, the higher morbidity in the females could have lowered the scores further.

The present study also revealed that the HRQOL worsened with increasing age. Similar findings were observed by Lahariya et al.[5] Also, people without diagnosed morbidities had a better HRQOL scores.

Impairment and disability adversely affect the health and was reflected by sudden decrease in scores as elderly with impairment had a total mean score of 55.77 and highest and lowest of 69.27 and 41.75 in Social Functioning and Role Physical respectively. There was significant difference in the total mean score difference of the people affected by impairment and disability and the subjects without any disability or impairment (p=0.007). Similar findings were present in a study by Lahariya et al, in an urban population.[5]

Limitations of the study were due to time constraints, the other sampling techniques like Cluster sampling, stratified sampling etc. could not be considered. Misreporting and underreporting might increase with the age and varies greatly with the disease considered. There are increased chances of recall bias in the study as it deals with elderly population. However, attempt was made to minimize it with cross verification from available health and other records.

CONCLUSION

The increasing population of elderly more so the female elderly population, the emergence of double burden of communicable and non-communicable diseases, presence of impairments and disabilities severely affects their HRQOL.

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