Multi-dimensional Problem Scoring in the Continuing Management of Elderly Patients

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ABSTRACT

Introduction: Usual diagnosis in hospitalised elderly addresses mainly their physical ailment. However, there is a need to also take into account various other issues like the psychological status, financial status, ability of activities of daily living, family support which will help plan continuing care at the home after discharge. This study aims to look at various aspects in the care of an elderly person and to make a multi-dimensional problem identification structure for them before discharge.

Method and materials: This descriptive study done over 3 months at the NRI Medical College General Hospital involved 120 inpatients (equal males & females) aged above 65 years. After taking an informed consent, a predetermined instrument covering 10 different dimensions i.e. physical, mental, emotional, spiritual, nutritional, family support, social, occupational, financial, and home environment was administered. A total of 40 responses were assigned appropriate scores, the minimum being 40 for those doing well and maximum being 105 indicating severity in all dimensions. The collected data was entered in Microsoft Excel and presented in tables and graphs. Important findings were subjected to tests of significance like Chi square and Z tests at 5% LOS. **Results:** The prepared scoring instrument showed a Cronbach's Alpha value of 0.78 which indicates internal consistency and an acceptable level of reliability. The mean score was 71 (range 50 – 95, Standard deviation 10.7). High scores show an inverse relationship to the financial situation of the patient (Chi square 32.4, p value < 0.0001). When the purpose in life for the elderly was weak, the score was higher (Chi square 53.7, p value < 0.00001).

Discussion: The study indicates the need for a problem scoring system which looks at all aspects of an elderly person's life i.e. psychological, emotional, social etc. in addition to the physical diagnosis. Elderly patients living alone, widowed or financially weak are prone to neglect and depression. Patients who feel lonely or have a poor will to live are also at risk.

Conclusion: A multi-dimensional problem identification system for elderly hospitalised patients can yield a comprehensive understanding of the patient's real life circumstances and help make better post discharge care plans.

Keywords: Multi-dimensional Problem, Continuing Management, Elderly Patients

INTRODUCTION

As a significant number of the people are ageing in today's world, all countries are facing major challenges to prepare their health and social structures to tackle this demographic transition [1]. According to 2011 census of India, 8.6% of the total population is aged 60 years and above, constituting a population of 104 million. Increase in longevity and decline of joint family and breakdown in social systems may push the elderly into loneliness and neglect. To ensure a healthy old age and an excellent quality of life, there is a need to promote appropriate physical activity, a nutritious diet, a positive attitude and mental wellbeing [2].

After an admission to hospital with various comorbidities, at discharge, there must be some concern about the circumstances that an elderly person will face back at home. Issues such as living alone, physical disabilities, emotional problems etc. do play an important role in his / her quality of life. A comprehensive understanding of dimensions like mental, environmental, social, financial etc. in an elderly person will bring to light the various factors which also have a bearing on his / her wellbeing [3]. Today's health care system must prepare itself to tackle the health needs of the elderly in an effective way. Although most of the health problems are addressed in an institutional health-care system, the home based care of an elderly person is completely neglected [4].

It has been suggested that wellness encompasses eight interdependent dimensions: physical, intellectual, emotional, social, spiritual, vocational, financial, and environmental. The neglect of any one will ultimately affect one's health, well-being, and quality of life [5]. In order to develop effective solutions to address some of these needs, it is important first to understand the care and support needs of older people [6]. Addressing the unmet care and support needs of an ageing population, and designing services and solutions centered on what older people need or want, is becoming an urgent public health priority [7]. Community based integrated and coordinated approaches for the immediate and long term care of the elderly, organized around their identified needs is essential [8].

Variations in older people's health are mostly due to their physical and social environments and their personal characteristics like their gender and socioeconomic status. Supportive physical and social environments allow people to do what is important to them, despite losses in capacity.

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A good diagnosis in the hospital spells out the whole clinical condition where the pathology and problems are well described. In the elderly, it is also necessary to follow this with the consideration of positive aspects of health as well as quality of life. A standardized multidimensional approach which in addition to the illness and physical disabilities must also address culturally appropriate and specific care needs of the elderly person and identify the patient's assets pertinent to care. This is essential to expectations of health restoration and promotion as jointly understood by clinician, patient and family. Such integrative diagnostic schemas may offer richer information for a more focused approach to the problems of the elderly population [9].

In the field of psychiatry, even though the multidimensional approach has been internationally accepted, the daily use by clinicians of the 'non-diagnostic' aspects is still limited. Placing a psychiatric condition into a single diagnostic category has been found to be difficult and a multidimensional approach provides a more comprehensive picture. A multidimensional schema based on the ICD-10 classification looks at four axes where axis one identifies the clinical disorders, axis two the disabilities, axis three the contextual factors and axis four the quality of life [10].

Such an inquiry into the healthcare issues of all elderly will help in counseling patients, their families and care givers in the community as the increasing elderly population brings with it unprecedented burdens of morbidity & mortality across the country [11].

The usual diagnosis in all elderly patients includes mainly the physical ailment. Older adults face a range of physical, social & psychological challenges due to living with chronic conditions. In elderly patients, care and support is required in three main areas: Social activities and relationships; Psychological health; Activities related to mobility, self-care and Domestic life 12. Older Indians face a wide range of health, social, and financial insecurities, with significant heterogeneity across several dimensions [13].

Evaluating relevant dimensions of an elderly patient's life (physical, mental, social etc.) will help in planning better long term continuing healthcare. Hospitals usually limit their interest to the disease condition of a patient. Scant interest is given to the other aspects of a patient's life like the home environment, finances, psychological and emotional concerns, dietary issues etc. A simple questionnaire applied during in-patient time can help look at all the other dimensional issues which play an important role in an elderly persons' life. This information can help in linking up the elderly person with community health care agencies and other governmental or NGO support systems.

With age the financial troubles get more severe and this will affect self-esteem and health. Poor access to necessary finances in old age gives way to melancholy, worry, fear, and demotivation. Mental health issues affect this age group and alter their outlook on life, which may lead to a life devoid of ambition. With declining health, the dwelling environment must be more acceptable, welcoming, and livable [14].

The role of the family in providing support and assistance is important in the care of the aged. Families not only provide moral and emotional support, but also the financial requirements, health care and security [15].

Objectives

To identify the various dimensions of an elderly person's life (mental, financial, social etc.) playing a role in their care.
To create a multidimensional problem based scoring system for elderly patients.

Methodology

This descriptive study done in the NRI Medical College & General Hospital Inpatient wards over a period of 3 months, involved 120 inpatients (equal males & females) aged above 65 years. Institutional Ethics Committee clearance was obtained and an informed consent was obtained from each subject.

The instrument: To identify and quantify the problems facing the elderly for planning continuing care post discharge, the following dimensions were looked at - physical, mental, emotional, spiritual, nutritional, family support, social, occupational, financial, and environmental. A predetermined multidimensional physical, psychosocial and environmental problem scoring questionnaire (Figure 1) covering 10 different aspects was administered to a total 120 inpatients (60 male and 60 female). A total of 40 responses were assigned appropriate scores ranging from a minimum of 40 for those who are doing well in all dimensions and a maximum of 105 indicating severity in all dimensions.

The collected data was entered in Microsoft Excel 2010 and presented in tables and graphs. Findings were subjected to tests of significance like Chi square and Z tests at 5% Level of Significance.

RESULTS

81.7% of the elderly females were having type 2 diabetes mellitus as compared to the elderly males (63.3%). (Chi square 5.06, p value 0.02, OR 2.58 (95% CI 1.04 to 6.5)) 21.7 % of males and 46.7% of the females are widowed. (Chi square 8.34, p value 0.004, OR 3.16 (95% CI 1.3 to 7.6).

The proposed multidimensional problem based scoring system in this study showed a Cronbach's Alpha value of 0.78 which indicates internal consistency and an acceptable level of reliability. The mean score obtained from applying the scoring system to the 120 elderly persons was 71 (Range between 50 to 95, and standard deviation 10.7). Some of the issues/ problems showed high percentages of increased scores (Table 1). While there were differences in individual dimensions (Table 2), the overall quartile scores for men and women were almost equal. 29.2% of the elderly were educated up to degree or PG and of them only 17.1% of them had high overall scores in 3rd and 4th quartiles compared to those lower educated (*Chi square 21.34, p value 0.00004, OR 8.42, 95% CI 2.9 to 25.6*). Higher scores were seen in elderly patients who were in poorer financial circumstances (*Chi square 32.4, p value < 0.0001*). When the purpose in life for the elderly was weak, the score was higher in Quartiles 3 and 4 (*Chi square 29.4, p value < 0.00001, OR 13.1 95% CI*

S.No	Issue / Problem	Score 1	Score 2	Score 3	Score obtained	Total
	Multidimensional Problem Scoring System for the Elderly					
	Patient's name:		Age:		Gender:	
I	**Physical Dimension**					
1	Activities of Daily Living	Able to do all	With support	Restricted		Total out of 12
2	Locomotion	Moves freely	With support	Restricted		
3	Exercise	Regular	Occasional	Never		
4	Sleep	Good	Initial / terminal insomnia	Global insomnia		
II	**Mental Dimension**					
5	Long term memory	Good	Weak	Poor		Total out of 10
6	Financial dealings	Good	Weak	Poor		
7	Remembers to take Rx	Yes	No			
8	Regular Mental activity	Yes	No			
III	**Emotional Dimension**					
9	Satisfied with life	Yes	Not sure	No		Total out of 15
10	Feels Helpless	Never	Occasional	All the time		
11	Purpose in living	Strong	Weak	Nil		
12	Satisfied with family Relations	Yes	Not sure	No		
13	Feels lonely	Never	Occasional	All the time		
IV	**Spiritual Dimension**					
14	Believes in God	Yes	Not sure	No		Total out of 9
15	Regular prayer etc.	Daily	Occasional	Never		
16	After life belief	Yes	Not sure	No		
V	**Nutritional Dimension**					
17	Balanced diet	Yes	Not sure	No		Total out of 14
18	Amount of food daily	Sufficient	Reduced			
19	Intake of fruits	Daily	Occasional	Rare to never		
20	Appetite	Good	Moderate	Poor		
21	Able to enjoy food	All the time	Occasional	Rare to never		
VI	**Family support Dimension**					
22	Spousal support	Healthy & supportive	Poor health / limited support	Nil / widow		Total out of 12
23	Children's' physical support	Good	Average	Poor / Nil		
24	Children's' financial support	Regular	Irregular	Nil		
25	Relationship with children	Active visits	Occasional visits	Rare to never		
VII	**Social Dimension**					
26	Involvement in Social activities	Good	Poor	Never		Total out of 9
27	Visits friends etc.	Good	Poor	Never		
28	Stays alone	Never	Sometimes	Mostly		
VIII	**Occupational Dimension**					
29	Feels gainfully employed	Yes	No			Total out of 7
30	Feels constructively occupied	Daily	Occasional	Rare to never		
31	Feels useful in the house	Yes	No			
IX	**Financial Dimension**					
32	Perceived financial status	Comfortable	Just managing	Poor		Total out of 7
33	Health Insurance (Private)	Yes	No			
34	Health Insurance (Govt)	Yes	No			
X	**Home Environment Dimension**					
35	Support for stairs	Yes	No			Total out of 10
36	Slippery floors	No	Yes			
37	Slippery bathroom floor	No	Yes			
38	Poor lighting in house	No	Yes			
39	Toilet type	Western	Indian			
40	Ambience	Quiet	Noisy			
	Remarks (if any):					Total out of 105

S. No	Dimension	Problem	% (n=120)
1	Physical	Insomnia present	76.7
2	Mental	Lack of any mental activity	60.8
3	Emotional	Not satisfied with life	63.3
		Purpose in living is weak	70.0
4	Spiritual	No belief in after life	72.5
5	Nutritional	Poor intake of fruits	75.8
6	Family support	Relationship with children poor	65.8
7	Social Score	Involvement in Social activities poor	69.2
8	Occupational	Feels not gainfully employed	74.2
		Feels not constructively occupied	80.8
9	Financial	No Health Insurance (Private)	73.3
		No Health Insurance (Govt)	85.0
10	Environmental	Slippery bathroom floor	87.5
		Toilet type - Indian	61.7

Table-1: High scoring issues in elderly patients

4.2 to 43.4). When lack of family support score was high, the overall score was also high (Chi square 40.84, p value <0.00001, OR 14.46, 95% CI 5.5 to 38.9). When the elderly person lived in an extended family as against a nuclear family; he/she had a favorable score (Chi square 10.3, p value 0.001, OR 4.38).

DISCUSSION

India must develop appropriate social and economic policies to allow for the rapid growth of the elderly, who will account for as much as a fifth of the population by the middle of the century. Concerns demand prioritization of economic and social measures to make them more senior citizen-friendly [16].

United Nations Principles for Older Persons 1991 declares that older persons should have sufficient income so as to access necessary food, water, shelter, clothing and health care. In addition they should also have access to family and community support. They should be able to live in environments that are safe and should be able to reside at home for as long as possible. They should have access to health care to help them to maintain or regain the optimum level of physical, mental and emotional well-being and to prevent or delay the onset of illness [17].

Under the National Health Mission (NHM) of India, elderly care is a priority which requires medical and paramedical health care workers trained in geriatric medicine. This requires preparation of standard training modules for in-service training [18]. NHM practitioners must understand the most up-to-date biomedical and psychosocial aspects of aging, health, wellness, and disease, and strive to support the older adult to remain as active, functional, and engaged as possible. The concept of active and healthy ageing needs to be promoted among the elderly, which includes preventive, promotive, curative and rehabilitative aspects of health [19].

For efficacious healthcare management in populations, risk scores and risk stratification methods are essential. The main goal of a scoring system is to provide a tool to record data precisely and consistently for routine evaluations and clinical studies. To help target health services, information regarding a patient's possibility of an untoward event is crucial though providers can't accurately predict elderly patients who are at highest risk of deterioration [20]. However these scores can help one to classify patients into risk groups based on their clinical and lifestyle characteristics. A risk stratification framework can combine several individual risk scores to create a broader profile of a patient and his complex current needs.

At its fundamental level, a risk score is a standardized metric for the likelihood that an individual will experience a particular outcome. Organizations can develop risk scores by examining large cohorts of patients with similar characteristics,

Dimensions	Issues (High score)	Males (n = 60) No (%)	Females (n = 60) No (%)	Chi square	p value	OR	95% CI
Physical Score	Dependence on others for Activities of Daily Living	33 (55.0)	18 (30.0)	7.67	0.005	2.85	1.3 to 6.5
	Needs support for Locomotion	27 (45.0)	12 (20.0)	8.55	0.003	3.27	1.4 to 8.0
	Insomnia present	40 (66.7)	52 (86.7)	6.71	0.009	3.25	1.2 to 9.04
Mental Score	Lack of any mental activity	27 (45.0)	46 (76.7)	12.63	0.0004	4.02	1.7 to 9.5
Emotional Score	Feels lonely often	10 (16.7)	20 (33.3)	4.44	0.03	2.5	1.0 to 6.5
Spiritual Score	Irregular / nil prayer etc.	28 (46.7)	14 (23.3)	7.18	0.007	2.88	1.2 to 6.8
Nutritional Score	Poor intake of fruits	53 (88.3)	38 (63.3)	10.23	0.001	4.38	1.6 to 12.7
Family support Score	No Spousal support	15 (25.0)	30 (50.0)	8.0	0.005	3.00	1.3 to 7.01

Table-2: Gender differences in Dimensional scores

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extracting key clinical and lifestyle indicators from those cases, and using algorithms to chart how those factors influence ultimate outcomes.

While the ICD 10 for psychiatric illnesses uses the word axis, this study prefers the word dimension which seems appropriate for community health approaches. Common types of physiological scoring systems in the critically ill are illness severity scores, outcome prediction scores and decision-support tools [21]. Current health care systems face difficulties in solving challenges facing the elderly, as they are designed to solve single, acute, and mainly short-term diseases [22].

A study by Cleland et al identified five salient quality of life dimensions: independence, social connections, emotional well-being, mobility, and activities [23]. Spoorenberg et al classified their elderly study into 3 strata: participants without complex care needs, participants at risk of complex care needs; and participants with complex care needs [24].

Most of the needs of older adults with multiple chronic conditions focus on lack of access to information and coordination of care. The main structural and social determinants that influence older adults' needs are their level of education / health literacy and their socioeconomic status. The needs of an elderly person encompass individual aspects, home environments and also relevant systems of care and support. Structural and social determinants of health are important to consider when addressing needs and solutions for older adults [25].

Physicians can explore and encourage disclosure and articulation of elderly patients' emotional concerns and provide supportive understanding in the light of the patients' life contexts [26]. The assessment of individual impairments and declines in capacity is used for the development of a comprehensive care plan, and all domains are assessed together [27, 28].

The results of this study show that the elderly have significant problems in various dimensions of life in addition to their physical illness. As this has a bearing on their quality of life, such an inquiry will help the clinician understand the non-medical issues confronting a patient in his home life. It will also help in counseling the patient, the family and other care givers. A study by Cleland et al identified five salient quality of life dimensions: independence, social connections, emotional well-being, mobility, and activities [23]. Spoorenberg et al classified their elderly study into 3 strata: participants without complex care needs, participants at risk of complex care needs, and participants with complex care needs [24].

Loneliness is a negative feeling which is subjective. It can be a social loneliness where the individual perceives a lack of a wider social network. It can also be an emotional loneliness where there is an absence of a specific desired companion. Social isolation is the paucity of social contacts and interactions with family members, friends or the wider community [29].

The results of this study show that the elderly have significant problems in various dimensions of life in addition to their physical illness. As this has a bearing on their quality of life,

such an inquiry will help the clinician understand the non-medical issues confronting a patient in his home life. It will also help in counseling the patient, the family and other care givers.

Elderly people who were remarkably engaged with religious activities had better quality of life and cognitive function as compared to those elderly who were either less engaged or did not practice religious activities [30]. Ageing positively is desired for all elderly and is based on a wide range of factors and like spirituality and beliefs that help them to have fulfilled lives. Health care workers must appreciate that older adults need to be treated as whole persons allowing them to acknowledge and draw upon all their roles, experiences and resources [31].

Health care providers especially doctors, are the ones to see the elderly patients with various ailments. The doctor is in a crucial position to understand the health care needs of the patient. If the doctor's diagnosis is comprehensive, touching upon the physical condition, the social situation, the emotional stability etc. of the elderly person, it will help the outreach health workers to be cognizant of the needs.

CONCLUSION

Older people living with chronic conditions have unmet care needs related to their physical and psychological health, social life, as well as the environment in which they live and interact. A higher multidimensional score will alert care givers about the need to develop appropriate care models and support services for older people. While continuing care is an accepted entity in western countries, there is a need for the same in India especially as elderly numbers are increasing.

This instrument for identifying the problems faced by an elderly person, clearly brought out scores that can help alert caregivers in the community to further investigate the living conditions, family and socio economic issues facing him / her. Such a checklist included in the case sheets of elderly patients will also encourage medical personnel and students to look beyond the clinical diagnosis and understand their comprehensive needs.

Reliable scoring systems must not only be more objective and less error-prone but also needs to be quick and not overload doctors with more work. There is a need to ensure that such a scoring system can keep up with the reality of the day-to-day practice of medicine.

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