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"USE OF NETWORK ANALYSIS TO EXPLORE THE HEALTH-RELATED PROBLEM OF ELDERLY IN COMMUNITY SETTING, WEST BENGAL."

Geriatrics

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ABSTRACT

Introduction: Many of the health related issues of elderly are interrelated making role of each individual issue difficult to identify. Without having proper idea about the contribution of various health related issues in health status of elderly, proper intervention plan becomes elusive .Network analysis is an approach to research that is uniquely suited to describe, explore, and understand structural and relational aspects of health. **Aim of the study:** The aim of this study was to carry out a network analysis of depression in people over 65 years old and interconnection between different health problems of community dwelling elderly population. **Materials And Methods:** A descriptive cross-sectional approach was used to collect the data after taking written consent from 500 community dwelling elderly population. Subjects were randomly selected after selecting the community development block of a district of West Bengal. Assessment of the subjects were done by using standardized perceived health problem screening tool, standardized geriatric depression scale (GDS), standardized subjective wellbeing inventory (SUBI) after establishing reliability and validity. Among 500 elderly with physical health problem, we created a network based on individual items from the physical health problem scale, with the nodes being each item (problem) and the edges being the strength of the association between the items (interconnection). By calculating measures of the centrality of each of the nodes, we were able to determine which problems were most central (influential) in the network. **Results:** Ising sampler method of estimation of network analysis was run using all variables. Marital status of elderly people had positive connection with housework and visual problem. Negative connections were found between visual problem and education, shopping, money management, transfer, light housework, lifting, carrying, walking and depression. Housework had strong negative connection with depression, age of elderly, gait and urinary problem. **Conclusion:** The construction of the complex network mappeddiseases and the influence on care for the elderly. Relevant information for health care professional, in search of effective interventions in the servicethat aims to contribute to the prevention of the health problems and assist in the functional independence of patients.

KEYWORDS

INTRODUCTION:

Multi-morbidity is the co-occurrence of two or more chronic diseases in an individual that is most commonin elderly patients and is a well-recognized example of the complexity of multi-organ system interactions.[1]Approximately two-thirds of U.S. adults aged 65 or older have been diagnosed with two or more chronic diseases, Multiple chronic diseases are associated with impaired function and quality of life , and require complex and costly healthcare management, decision-making, and coordination [2]. Multimorbidity is not a problem only for older adults, its prevalence is much higher in older age groups, with 65% of people aged 65–84 years and 82% of people aged at least 85 years affected.[3]

In this study we examined the network clustering structure that underlies physical health problem, depression and subjective well being variables that contribute to ageing. The researcher had previously used classification regression tree using the same population, the model attempt to predict subjective well being, geriatric depression with demographic variables. The present study tries to interconnection of health problems and depression using network analysis.

Conventionally, "elderly" has been defined as a chronological age of 65 years old or older, while those from 65 through 74 years old are referred to as "early elderly" and those over 75 years old as "late elderly."(Orimo,2006),Between 2010 and 2050, the share 65 and older is expected to increase from 5 percent to 14 percent, while the share in the oldest age group (80 and older) will triple from 1 percent to 3 percent (UN 2011).

It is estimated that 80% of the elderly live with chronic conditions such as arthritis, hypertension, diabetes, heart disease, and vision or hearing disorders. Most of those with chronic illnesses are able to meet their own needs; only 25% require any special type of care, more than two thirds of the elderly (68%) live independently in a family setting. [4]. Unipolar depression occurs in 7% of the general elderly population and it accounts for 5.7% of years lived with disability among over 60 year olds. Depression is a serious illness affecting approximately 15 out of every 100 adults over age 65 in the United States.[5].Meta analysis of seventy four original research studies showed a median prevalence of 21.9% of depression among Indian elderly population. [6] If there is late life depression then quality of life gets impaired [7]. Regression analysis finds that depression and subjective well being has a close relationship, and can better predict happiness [8]. A Korean study on older adults also reveals the impact of higher depression score on happiness [9].

Network analysis is a research approach that can describe, explore, and understand the simultaneous connections among several aspects related to one or more health conditions. This method uses graphic representations to illustrate connections between multiple factors, which allows investigators to analyze multiple simultaneous associations between variables in a manner hardly possible with other statistical techniques[10] Network analysis is an increasingly common approach for evaluating complex systems. The pattern of connections among elements in a system is a network, which may be visualized using points or "nodes" to represent elements and lines or "edges" to represent relationships among elements. Network analysis seeks to characterize the structure of interacting elements, including the strength of connections among elements (nodes), and to identify sets of clustered nodes called "communities"[11] Networks consist of nodes and edges. Nodes represent the objects of study, and edges represent the connections between them. In psychopathology networks, nodes represent symptoms and edges represent associations between symptoms, allowing the creation of two-dimensional maps formed by nodes, grouped together as they are related and indicating the strength of the connection with the thickness of the edges that connect them. In this way, it is possible to study the interrelationships of the symptoms from a visual perspective, facilitating the interpretation of the results and helping to understand the structure of underlying relationships, identifying which tend to appear together and connected and which are more peripheral.

Health research often address social, clinical, physical, and mental health variables. In many situations, univariate analyses may not explain the phenomenon under investigation because they capture the isolated action of each variable regarding the outcome under study.

With network analysis[12], it is possible to visually explore relationships that occur simultaneously between multiple variables. Networks are graphical structures composed of nodes, circle-shaped elements that represent variables. Nodes connect through lines called edges. Networks can be classified as unweighted and weighted. In unweighted networks, edges represent only the relationship between nodes, and in weighted networks, the magnitude of the relationships is shown. That is, the thicker the connection between nodes, the stronger the relationship between them. In addition, the edges may vary in colour depending on the direction of the relationship (positive or negative). The statistical programs by default define that the green or

blue colour represents a positive relationship, and the red, a negative relationship. We used JASP SOFTWARE to perform Network Analysis[13].

Need For The Study:

Elderly people suffer from multiple age related medical and physical problems, lack of social and family support, loneliness, inability to adapt to new environment and society, loss of spouse or close relatives, changing societal values. Depression had a negative association with perceived physical health. So there is a need to manage depression as it is the critical aspects of managing physical health. Good physical performance was an important variable for better perceived health which in turn influenced subjective well being [14].

Objectives:

To analyze patterns of interaction between physical health problems that affect elderly people in community setting.

Methodology

Among 500 elderly with physical health problem, we created a network based on individual items from the physical health problem scale, with the nodes being each item (problem) and the edges being the strength of the association between the items (interconnection). By calculating measures of the centrality of each of the nodes, we were able to determine which problems were most central (influential) in the network.

Sampling Technique

Simple random sampling technique was chosen to select one district of West Bengal for the study. This district had 5 community development (CD) blocks. Out of five CD blocks, one CD block was selected randomly, voter lists of respective villages were collected and subjects were allotted a study serial number then computer generated random sampling was done to choose 50% of elderly people from each village, with replacement, if needed when chosen subjects was not willing to participate in the study or absent on the day of data collection due to migration or death.Written informed consent was taken from elderly people before data collection.

Inclusion Criteria

- Elderly people who were aged 65 years old and above and lives in community.
- Elderly people who were willing to participate in the study.
- Elderly people who can understand, read or write.

Exclusion Criteria

- Elderly who could not understand, read and write.
- Elderly who were severely ill and not willing to participate in study.

Research Tool

Sl. No	Name of Tool	Number of Items	Reliability	Score
1	Demographic	13		
2	Geriatric depression scale[15]	30	Chronbach α=0.92	Yes=1,No=0 Cutoff score≥14[16]
3	Subjective well being inventory[17]	40 Positive items-19 Negative items-21	Test retest r-0.82	40-120(Three point Scale)
4	Perceived physical health problem screening tool[18]	19	Chronbach α=0.87	Yes-1 No-0

Ethical Clearance

Approval to conduct the study was obtained from the ethical committee, Calcutta National Medical College and Hospital.

Analysis And Interpretation:

Table No 1 Frequency And Percentage Of Socio Demographic Characteristics Of Subjects: n=500

Socio-demographic Characteristics of subjects		Mean	SD
Age in years		70.24	5.5
Other demographic characteristics		Frequency	Percentage
Age(Years)	65-74	372	74.4
	75-84	116	23.2
	85-94	11	2.2
	95-100	1	0.2
Gender	Male	146	29.2%
	Female	354	70.8%
Marital status	Unmarried	25	5%
	Married	475	95%
Spouse status	Having spouse	327	68.84%
	Widow/widower	148	31.16%
Typeof family	Joint	170	34%
	Nuclear	330	66%
Offspring	Having	468	93.6%
	Not having	32	6.4%

As shown in Table No.1. The mean age of the subjects was 70.24 years (SD±5.5), most of the elderly (74.4%) belongs to age group of 65-74 years of age. Majority (70.8%) of the participants were female, majority (95%) elderly were married, out of which 31.16% of them were widow/widower. More than half (66%) of the subjects were living in a nuclear family. Most of the elderly (93.6%) were having off spring and only 6.4% did not have offspring. n=500

Table No 2: Frequency And Percentage Of Socio Demographic Characteristics Of Subjects:

Other demographic characteristics		Frequency	Percentage
Close relatives	No	71	14.2%
	Yes	429	85.8%
Hobby	Yes	214	42.8%
	No	286	57.2%
Education	Illiterate	271	54.2%
	Literate	84	16.8%
	Primary level	113	22.6%
	10^{th}&12^{th} class	28	5.6%
	Graduate and postgraduate	4	0.8%
Monthly income	Rs<4000/-	165	33%
	Rs4000-10,000/	204	41%
	Rs10,000-15,000/-	90	18%
	Rs>15,000/-	40	8%

As shown in Table No.2. More than three fourth of the subjects (85.8%) reported to be having close relatives. 42.8 % said to be having hobby of their own.54.2% of the subjects were illiterate, only 16.8%and 22.6% were literate and having primary level of education respectively. Highest number (41%) of subjects were reported to be having a family income of Rs.4, 000/-to 10,000/-.

Description Of The Subjects Based On Selected Variables

Table No. 3 Description Of The Subjects Based On Geriatric Depression& Subjective Well Being n=500

Variables	Range	Mean	Median	SD
Geriatric depression Scale (GDS) score	0-30	12..83	13	4.86
Subjective well being(SWB)score	40-120	83.33	84	11.21

As shown in Table No. 3, the mean GDS score of subjects was 12.83 with the SD of 4.86 and mean SWB score was 83.33 with the SD of 11.21.

Table No. 4 Centrality Measures Per Variable, N=500

Variables	Betweenness	Closeness	Strength	Expected influence	Betweenness	Closeness	Strength	Expected influence
Marital status	0.630	2.136	1.653	3.967	-0.273	-3.450	-0.924	1.062
Gender	-0.284	-0.275	1.045	-0.729	-0.273	-0.907	1.139	-1.163
Education	-0.284	-0.073	-0.544	-0.098	-0.255	0.334	-0.493	0.474
Shopping	-0.284	-0.073	-0.544	-0.098	-0.246	0.334	-0.493	0.474
Money Management	-0.284	-0.073	-0.544	-0.098	-0.246	0.334	-0.493	0.474
Transfer	-0.284	-0.073	-0.544	-0.098	-0.247	0.334	-0.493	0.474
Light house Work	-0.284	-0.073	-0.544	-0.098	-0.241	0.334	-0.493	0.474

Kneeling	-0.284	-0.943	0.333	-0.878	-0.273	-0.542	1.226	-1.016
Housework	-0.118	1.358	1.998	-0.342	-0.273	0.080	2.237	-2.096
Lifting	-0.284	-0.073	-0.544	-0.098	-0.249	0.334	-0.493	0.474
Carrying	-0.284	-0.073	-0.544	-0.098	-0.244	0.334	-0.493	0.474
Walking	-0.284	-0.073	-0.544	-0.098	-0.247	0.334	-0.493	0.474
Writing	-0.284	-0.073	-0.544	-0.098	-0.081	0.334	-0.493	0.474
Visual	4.037	1.533	2.460	-0.842	4.122	1.546	-0.493	-2.663
Urinary problem	-0.284	-0.073	-0.544	-0.098	-0.255	0.334	-0.493	0.474
Gait	-0.284	-0.073	-0.544	-0.098	-0.227	0.334	-0.493	0.474
Age	-0.284	-0.073	-0.544	-0.098	-0.100	0.334	-0.493	0.474
Help by others	-0.284	-2.865	-0.421	0.094	-0.273	-1.065	0.257	-0.290
Depression present	-0.284	-0.073	-0.544	-0.098	-0.119	0.334	-0.493	0.474

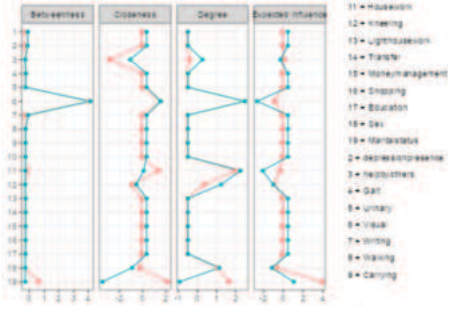

Fig. 2 Centrality Plot: Standardized centrality measures of the network nodes. Node betweenness is the importance of a variable to connect other variables with each other; node closeness is a measure for indirect connectivity of a variable; node strength is a measure for direct Connectivity of a variable.

Sl. No	Variable	Barrat	Onnela	WS	Zhang	Barrat	Onnela	WS	Zhang
1	Money management	0.579	0.640	0.661	0.361	0.660	0.648	0.661	0.142
2	Age	0.579	0.640	0.661	0.361	0.660	0.648	0.661	0.142
3	Transfer	0.579	0.640	0.661	0.361	0.660	0.648	0.661	0.142
4	Light housework	0.579	0.640	0.661	0.361	0.660	0.648	0.661	0.142
5	Kneeling	-2.143	-1.843	-1,433	-1.171	-1.418	-1.139	-1.433	0.478
6	Housework	-1.267	-0.666	-1.433	-1.394	-1.439	-0.827	-1.433	-0.593
7	Lifting	0.579	0.640	0.661	0.361	0.660	0.648	0.661	0.142
8	Carrying	0.579	0.640	0.661	0.361	0.660	0.648	0.661	0.142
9	Walking	0.579	0.640	0.661	0.361	0.660	0.648	0.661	0.142
10	Writing	0.579	0.640	0.661	0.361	0.660	0.648	0.661	0.142
11	Visual	-1.385	-1.098	-1,433	-2.444	-1.535	-1.395	-1.433	-2.087
12	Marital status	0.509	-1.256	-1.433	-0.612	-1.223	-1.904	-1.433	3.019
13	Urinary problem	0.579	0.640	0.661	0.361	0.660	0.648	0.661	0.142
14	Gait	0.579	0.640	0.661	0.361	0.660	0.648	0.661	0.142
15	Gender	-1.664	-1.498	-1.433	-1.301	-1.504	-1.531	-1.433	-1.582
16	Education	0.579	0.640	0.661	0.361	0.660	0.648	0.661	0.142
17	Help by others	-1.580	-1.954	-1.433	2.224	-1.463	-1.627	-1.433	-1.087
18	Shopping	0.579	0.640	0.661	0.361	0.660	0.648	0.661	0.142
19	Depression present	0.579	0.640	0.661	0.361	0.660	0.648	0.661	0.142

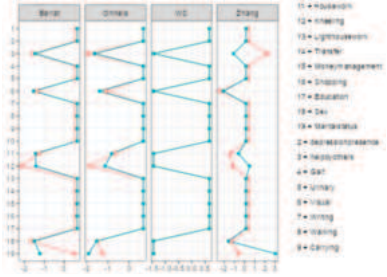

Fig.3: Clustering plot

Table No.4: Clustering Measures Per Variable, N=500

Table No.5: Weight Matrix:1, N=5009

Variables	Marital status	Gender	Education	Shopping	Money Management	Transfer	Light house work	Kneeling	Housework	Lifting	Carrying	Walking	Writing	Visual	Urinary	Gait	Age	Help by other	Depression
Marital status	0.000	16.391	-0.181	-0.181	-0.181	-0.181	-0.181	-0.260	36.237	-0.181	-0.181	-0.181	-0.181	41.457	-0.181	-0.181	-0.181	3.725	-0.181
Gender	16.391	0.000	-4.535	-4.535	-4.535	-4.535	-4.535	-0.088	2.046	-4.535	-4.535	-4.535	-4.535	-0.253	-4.535	-4.535	-4.535	0.942	-4.535
Education	-0.181	-4.535	0.000	0.000	0.000	0.000	0.000	-3.719	-5.351	0.000	0.000	0.000	0.000	-6.530	0.000	0.000	0.000	-1.451	0.000
Shopping	-0.181	-4.535	0.000	0.000	0.000	0.000	0.000	-3.719	-5.351	0.000	0.000	0.000	0.000	-6.530	0.000	0.000	0.000	-1.451	0.000
Money Management	-0.181	-4.535	0.000	0.000	0.000	0.000	0.000	-3.719	-5.351	0.000	0.000	0.000	0.000	-6.530	0.000	0.000	0.000	-1.451	0.000
Transfer	-0.181	-4.535	0.000	0.000	0.000	0.000	0.000	-3.719	-5.351	0.000	0.000	0.000	0.000	-6.530	0.000	0.000	0.000	-1.451	0.000
Light house Work	-0.181	-4.535	0.000	0.000	0.000	0.000	0.000	-3.719	-5.351	0.000	0.000	0.000	0.000	-6.530	0.000	0.000	0.000	-1.451	0.000
Kneeling	-0.260	-0.088	-3.719	-3.719	-3.719	-3.719	-3.719	0.000	3.130	-3.719	-3.719	-3.719	-3.719	1.040	-3.719	-3.719	-3.719	0.290	-3.719
Housework	36.237	2.046	-5.351	-5.351	-5.351	-5.351	-5.351	3.130	0.000	-5.351	-5.351	-5.351	-5.351	0.580	-5.351	-5.351	-5.351	-1.228	-5.351
Lifting	-0.181	-4.535	0.000	0.000	0.000	0.000	0.000	-3.719	-5.351	0.000	0.000	0.000	0.000	-6.530	0.000	0.000	0.000	-1.451	0.000
Carrying	-0.181	-4.535	0.000	0.000	0.000	0.000	0.000	-3.719	-5.351	0.000	0.000	0.000	0.000	-6.530	0.000	0.000	0.000	-1.451	0.000
Walking	-0.181	-4.535	0.000	0.000	0.000	0.000	0.000	-3.719	-5.351	0.000	0.000	0.000	0.000	-6.530	0.000	0.000	0.000	-1.451	0.000
Writing	-0.181	-4.535	0.000	0.000	0.000	0.000	0.000	-3.719	-5.351	0.000	0.000	0.000	0.000	-6.530	0.000	0.000	0.000	-1.451	0.000

Visual	41.457	-0.253	-6.530	-6.530	-6.530	-6.530	-6.530	1.040	0.580	-6.530	-6.530	-6.530	-6.530	0.000	-6.530	-6.530	-6.530	-1.105	-6.530
Urinary problem	-0.181	-4.535	0.000	0.000	0.000	0.000	0.000	-3.719	-5.351	0.000	0.000	0.000	0.000	-6.530	0.000	0.000	0.000	-1.451	0.000
Gait	-0.181	-4.535	0.000	0.000	0.000	0.000	0.000	-3.719	-5.351	0.000	0.000	0.000	0.000	-6.530	0.000	0.000	0.000	-1.451	0.000
Age	-0.181	-4.535	0.000	0.000	0.000	0.000	0.000	-3.719	-5.351	0.000	0.000	0.000	0.000	-6.530	0.000	0.000	0.000	-1.451	0.000
Help by others	3.725	0.942	-1.451	-1.451	-1.451	-1.451	-1.451	0.290	-1.228	-1.451	-1.451	-1.451	-1.451		-1.451	-1.451	-1.451	0.000	-1.451
Depression present	-0.181	-4.535	0.000	0.000	0.000	0.000	0.000	-3.719	-5.351	0.000	0.000	0.000	0.000	-6.530	0.000	0.000	0.000	-1.451	0.000

Table No.6: Weight Matrix 2, N=500

Variables	**Marital status**	**Gender**	**Education**	**Shopping**	**Money Management**	**Transfer**	**Light house work**	**Kneeling**	**Housework**	**Lifting**	**carrying**	**walking**	**Writing**	**Visual**	**Urinary**	**Gait**	**age**	**Helpby other**	**depression**
Marital status	0.000	0.607	-1.222	-1.222	-1.222	-0.181	-1.222	0.551	-0.825	-1.222	-1.222	-1.222	-1.222	-0.133	-1.222	-1.222	-1.222	-0.891	-1.222
Gender	0.607	0.000	-5.098	-5.098	-5.098	-5.098	-5.098	0.191	0.952	-5.098	-5.098	-5.098	-5.098	0.229	-5.098	-5.098	-5.098	-0.318	-5.098
Education	-1.222	-5.098	0.000	0.000	0.000	0.000	0.000	-5.045	-6.851	0.000	0.000	0.000	0.000	-7.595	0.000	0.000	0.000	-3.452	0.000
Shopping	-1.222	-5.098	0.000	0.000	0.000	0.000	0.000	-5.045	-6.851	0.000	0.000	0.000	0.000	-7.595	0.000	0.000	0.000	-3.452	0.000
Money Management	-1.222	-5.098	0.000	0.000	0.000	0.000	0.000	-5.045	-6.851	0.000	0.000	0.000	0.000	-7.595	0.000	0.000	0.000	-3.452	0.000
Transfer	-1.222	-5.098	0.000	0.000	0.000	0.000	0.000	-5.045	-6.851	0.000	0.000	0.000	0.000	-7.595	0.000	0.000	0.000	-3.452	0.000
Light house Work	-1.222	-5.098	0.000	0.000	0.000	0.000	0.000	-5.045	-6.851	0.000	0.000	0.000	0.000	-7.595	0.000	0.000	0.000	-3.452	0.000
Kneeling	0.551	0.191	-5.045	-5.045	-3.719	-3.719	-5.045	0.000	3.157	-5.045	-5.045	-5.045	-5.045	0.713	-5.045	-5.045	-5.045	-0.463	-5.045
Housework	-0.825	0.952	-6.851	-6.851	-5.351	-5.351	-6.851	3.157	0.000	-6.851	-6.851	-6.851	-6.851	0.563	-6.851	-6.851	-6.851	0.445	-6.851
Lifting	-1.222	-5.098	0.000	0.000	0.000	0.000	0.000	-5.045	-6.851	0.000	0.000	0.000	0.000	-7.595	0.000	0.000	0.000	-3.452	0.000
Carrying	-1.222	-5.098	0.000	0.000	0.000	0.000	0.000	-5.045	-6.851	0.000	0.000	0.000	0.000	-7.595	0.000	0.000	0.000	-3.452	0.000
Walking	-1.222	-5.098	0.000	0.000	0.000	0.000	0.000	-5.045	-6.851	0.000	0.000	0.000	0.000	-7.595	0.000	0.000	0.000	-3.452	0.000
Writing	-1.222	-5.098	0.000	0.000	0.000	0.000	0.000	-5.045	-6.851	0.000	0.000	0.000	0.000	-7.595	0.000	0.000	0.000	-3.452	0.000
Visual	-0.133	0.229	-7.595	-7.595	-6.530	-6.530	-7.595	0.713	0.563	-7.595	-7.595	-7.595	-7.595	0.000	-7.595	-7.595	-7.595	0.341	-7.595
Urinary problem	-1.222	-5.098	0.000	0.000	0.000	0.000	0.000	-5.045	-6.851	0.000	0.000	0.000	0.000	-7.595	0.000	0.000	0.000	-3.452	0.000
Gait	-1.222	-5.098	0.000	0.000	0.000	0.000	0.000	-5.045	-6.851	0.000	0.000	0.000	0.000	-7.595	0.000	0.000	0.000	-3.452	0.000
Age	-1.222	-5.098	0.000	0.000	0.000	0.000	0.000	-5.045	-6.851	0.000	0.000	0.000	0.000	-7.595	0.000	0.000	0.000	-3.452	0.000
Help by others	00.891	-0.318	-3.452	-3.452	-3.452	-3.452	-3.452	-0.463	0.445	-3.452	-3.452	-3.452	-3.452	0.341	-3.452	-3.452	-3.452	0.000	-3.452
Depression present	-1.222	-5.098	0.000	0.000	0.000	0.000	0.000	-5.045	-6.851	0.000	0.000	0.000	0.000	-7.595	0.000	0.000	0.000	-3.452	0.000

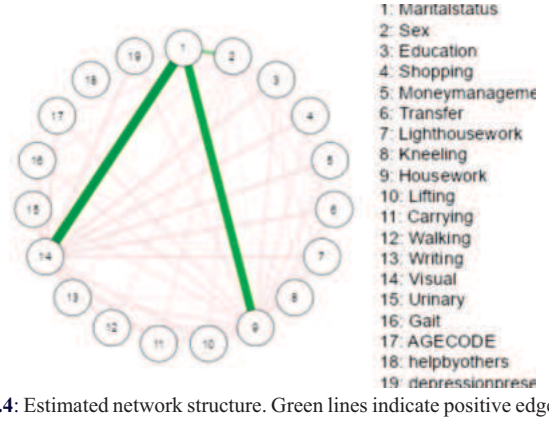

Fig.4: Estimated network structure. Green lines indicate positive edge weights. The thickness of the edge depicts its strength. n=500

The data presented in fig.4, represents that marital status of elderly people had positive connection with housework and visual problem.

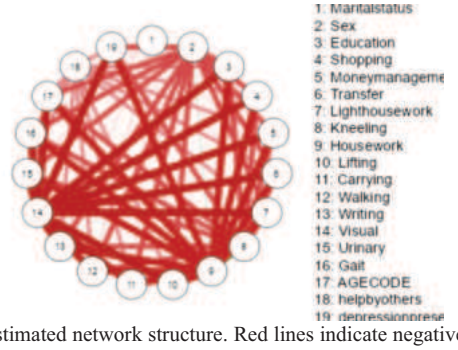

Fig.5: Estimated network structure. Red lines indicate negative edge weights. The thickness of the edge depicts its strength. n=500

Negative connections were found between visual problem and education, shopping, money management, transfer, light housework, lifting, carrying, walking and depression. Housework had strong negative connection with depression, age of elderly, gait and urinary problem.

DISCUSSION:

Visual impairment impacts on every part of a person's life. It is associated with falls, reduced capacity to carry out everyday activities, the need for residential care, and is one of the strongest risk factors for functional status decline in community-living people. However, because older people often have multiple health problems, many of these individuals may also have additional health conditions which further compromise health and rehabilitation outcomes, including reduced quality of life, disability, increased healthcare costs, increased inpatient admissions and higher death rates[19]

Vision needs to be recognised as a key part of overall health. There is mounting evidence indicating that vision loss affects more than how people see[20] and has implications for physical, cognitive, and mental health, and can exacerbate inequities in employment, health-care access, and income[21]

Healthy aging has been associated with a decrease in functional network specialization. Variability of alterations of functional connectivity is especially high across older adults.[22]Numerous studies have shown that vision impairment is often associated with various negative health outcomes and poor quality of life[23]

Data from 22 states examined unadjusted health-related QOL among individuals' ages 40 to 64 years by visual impairment status and found that the percentage of individuals reporting life dissatisfaction, fair or poor reported health, physical and mental unhealthy days, and days of limited activity increased as the self-reported severity of vision impairment increased. Another study found similar results among people ages 65 and older [24] Visual field loss is present in 1 of every 20 community-dwelling elderly people and is associated with impaired daily functioning.[25]

In the present study we found negative connection between visual problem and education, shopping, money management, transfer, light housework, lifting, carrying, walking and depression. Housework had strong negative connection with depression, age of elderly, gait and urinary problem.

Demura & Sato (2003) revealed that depression had a negative association with perceived physical health. Alexopoulos et al (1996) reported that excess disability, morbidity, mortality are associated with geriatric depression. Present study also reported a consistent finding with these studies in which significant association was found between perceived physical health problems and mean depression score of subjects. Jacob SR et al (2015) cited that presence of a chronic morbidity, cognitive impairment, physical disability etc were significantly associated with depression. Sharma R et al (2012) revealed that poor perception of own health was found to be associated with depression. Kim JI et al (2009) had done a study among Korean elderly and found perceived physical health status to be a powerful factor to predict depression. These studies suggest that perceived physical health status is one of the reversible factors impacting on depression

CONCLUSION:

Elderly people aged 65 years and older with visual impairment have a broad range of physical and mental health co morbidities. This has important implications for clinical practice and for the future design of integrated services to meet the complex needs of patients with visual impairment, for example, embedding depression screening within eye care services. Meeting elderly needs and the challenges posed by visual impairment will require an integrated, multilevel approach which takes account of the clinical complexity of coexisting health conditions in this vulnerable group.

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