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A Study on Impact of Social Isolation on Psychological Health, Physical Health and Dietary Pattern in Geriatric Population

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ABSTRACT :

Background :- Social Isolation is being considered as a major problem among the geriatric population. This isolation was seen to be causing decline in psychological health and difficulty in carrying out the daily living activities in older people. It was also found to be causing a decrease in food consumption leading to risk of malnutrition.

Aim :- To study the impact of social isolation on psychological health, physical health and dietary patterns in elderly population belonging to 60-80 years.

Methodology :- A cross-sectional research study design with a purposive convenience sampling method was used and the sample size was 100 older people residing within Maharashtra. The data was collected through a google form from the age group of 60-80 years. A questionnaire consisted demographic details, economic details, anthropometric measurements, social isolation measurement by UCLA (University of California, Los Angeles) loneliness scale, psychological well- being by Ryff's Psychological well-being scale, physical activity, dietary habits, FFQ and 24 hrs dietary recall.The data analysis was done using the Statistical Package of Social Software Program (SPSS,version 20). The examination of data comprised one way ANOVA, t-test, Pearson correlation.

Result :-In the study, the majority of the participants were living with either their spouse or their children. The participants belonged to the middle upper class category as per family income and most of the participants were found to be retired. The participants were found

to be having co-morbidities like High BP and Diabetes.The general health of the subjects was found to be between fair and good. The social isolation was found to be more in participants belonging to 71-80 years of age and in females ($p<0.05$)whereas the psychological well-being scores was found to be high among the age group of 61-70 years and in males ($p<0.05$). The different food group intake was found to be almost similar in both the age groups but the intake of macronutrient and micronutrients was found to be lower in both the age groups and genders as compared to the recommended dietary allowance. The effect of social isolation on psychological health was statistically significant among both the age groups ($p<0.01$) similarly isolation was

also seen to be affecting the physical activities of the participants. The association of dietary intake pattern and social isolation was also found to be statistically significant when compared among the age groups as well as genders ($p<0.05$). Social isolation was seen to be lowering down the consumption of almost every food group like cereals, dals, milk and dairy products, vegetables, fruits, nuts and seeds as well beverages.

Conclusion :- According to the findings of the study, social isolation was seen to be highly affecting the psychological health and physical activity of the geriatric population. The effects of social isolation have also reduced the consumption of different food groups which may cause deficiency among the geriatric population.
Keywords :- Social Isolation, Psychological Health, Activities of Daily living, Nutrition, Food group, Geriatric Population, Aging.

I. INTRODUCTION

India is considered as the 2nd largest country having a higher older population (140 million) of 60 years and above (Bloom et al, 2018). The number of elderly people has increased up to 34million by decade and it has been expected that it can be increased upto 56million by the year 2031. Even though the older population is increasing in India, there are various problems which are generally faced by them which includes social problems, economic problems, psychological problems and other health problems (Kaur R, 2018). Social isolation is the lack of social contact or having less people to interact on a regular basis (National Institute of Aging). Social isolation is being considered as a major problem for older people living in a community. (Delerue et al, 2021). Elders are often seen dealing with psychological health problems. Over 20% of the older population belonging to 60years of age or more are suffering from mental or neurological disorders (WHO, 2021). Psychological distress is often considered as one of the factors leading to change in social health and functional capacity of elderly population. Physical and functional capacity of individuals decrease with the increase in age thus leading to difficulty in performing daily living activities in geriatric population. The study performed with the older adults >65years of age from U.S. National Health & Aging Trend Study found that with 1 unit increase in social isolation have caused a decrease of 0.27unit in physical activity among older adults (Del et al,2021). The relationship between social isolation, loneliness and physical performance in older-adults has become acutely important in the context of the COVID-19 pandemic. One of the population based studies observed that loneliness was associated with poor psychological health and physical health which was associated with age. (Richard A et.al, 2017). Social environment also has a great impact on dietary habits of an individual which plays a very important role in maintaining good health. One UK based study performed on adults (>50 years) of age has shown that isolation from social groups like friends and family had a negative effect on the consumption of some food groups causing deficiency among older adults (Conklin et al, 2014). Some studies observed that psychological health, physical health and dietary intake are highly associated with each other. A study stated that people skipping meals like breakfast and dinner had symptoms of depression and anxiety. (Robins et al, 2018). Social isolation was seen affecting every health aspect of geraitric population but some studies also revealed that social isolation can also increase the risk of CVD disorders or risk of cancer among the geraitric population. (Hu J et.al,2021 & Kraav LS et.al,2021).

II. NEED OF THE STUDY

The problem of social isolation is faced by geriatric population over years but this problem came into the meaning during covid-19 pandemic where people were kept in isolation to prevent the spread of infection. The social isolation during pandemic time had affected every age group and thus various studies were done to understand the mechanism of isolation on human beings. The isolation or loneliness has been identified as a major issue among the geriatric population which is affecting mental health, low physical activity and less food consumption. The study helps in understanding the effect of isolation on different factors individually as well as their correlation with food consumption.

III. RESEARCH METHODOLOGY

A cross-sectional study design where purposive sampling technique was used to select the participants among the age group of 60-80 years from male and female gender. The data was collected online as well as offline via Google forms using instructed questionnaires. Total 100 participants were included in the study. The inclusion criteria for the study was to include the participants belonging to the age 60-80 years and should not be infected with covid-19 during the study period. The questionnaire contains, demographics details,

socio-economic status, anthropometric measurements, general medical information, measurement of social isolation by UCLA (University of California, Los Angeles) loneliness scale which was composed of 20 questions related to the interpersonal relationships.Psychological well-being was measured by Ryff's Psychological well-being scale that include 18 questions related to the autonomy, environmental mastery, personal growth, positive relationships with others and self-acceptance. Physical activity was measured along with daily living activities. Food frequency questionnaire and 24-hour dietary recall of one day was also collected to understand the nutrient intake. The data analysis was done using the Statistical Package of Social Sciences Program (SPSS version, 20). The tests used were one-way ANOVA, independent sample t test and Pearson's correlation**.**

IV. RESULTS AND DISCUSSION

The study was conducted in geriatric population among the age groups of 60-80 years. Total 100 participants were included in this study out of which (66%) participants belonged to the 61-70 years of age and (34%) were belonging to the age group 71-80 years of age. The male participants (54%) were higher in the study as compared to the female participants (46%). Majority of the participants have completed their education upto 4th or SSC and (44%) were retired.

table 1: anthropometric, loneliness, psychological well-being, daily living activities measurements and dietary pattern intake of the participants

Measurement Parameters	Age Groups	Mean ± SD	p - value	Gender	Mean ± SD	p - value
Anthropometric Measurements						
Height (in cm)	61-70 years	162.81±9.45	0.453	Male	166.48+8.86	0.000*
	71-80 years	161.25±10.45		Female	157.35±8.47	
Weight (in kg)	61-70 years	66.27±9.30	0.157	Male	69.15±8.62	0.000*
	71-80 years	63.44±9.64		Female	60.80±8.41	
BMI (kg/m2)	61-70 years	25.03±3.04	0.379	Male	24.99±2.88	0.573
	71-80 years	24.44±4.33		Female	24.63±3.44	0.579
Measurement of Loneliness						
UCLA Loneliness Scale	61-70 years	47.97±9.95	0.012*	Male	49.98±10.83	0.839
	71-80 years	53.32±9.74		Female	49.54±9.42	0.821

Measurement of Psychological Well-being						
Psychological well-being	61-70 years	83.47±12.42	0.001*	Male	82.26±13.15	0.139
	71-80 years	73.49±11.43		Female	74.48±12.07	0.137
Measurement of Daily Living Activities						
Daily Living Activities	61-70 years	20.83±6.05	0.000*	Male	18.62±6.05	0.526
	71-80 years	15.41±5.29		Female	19.41±6.20	
Nutrient Intake						
Energy (kcal)	61-70 years	1582±345	0.911	Male	1618±347	0.223
	71-80 year	1574±325	0.909	Female	1535±322	0.220
Protein (gm)	61-70 years	39.18±11.59	0.511	Male	39.83+11.35	0.259
	71-80 years	37.59±11.07	0.506	Female	37.25±11.40	
Carbohydrates (gm)	61-70 years	204.39±56	0.297	Male	213.74±59.28	0.329
	71-80 years	216.86±57.12	0.201	Female	202.63±52.89	0.325
Fats (gm)	61-70 years	41.74±7.49	0.953	Male	47.49+6.96	0.224
	71-80 years	41.65±7.48	0.954	Female	40.76±6.81	0.223
Fiber (gm)	61-70 years	21.57±2.17	0.699	Male	23.07±10.18	0.055
	71-80 years	20.73±9.94	0.696	Female	14.64±9.10	0.054

*Correlation is significant at level ($p<0.05$) 2-tailed.

table 1: describes the various measurements included in this study. Anthropometric measurements of all the participants were collected and differentiated into age groups and gender. In age group wise comparison it was observed that height of participants were almost similar, whereas the older age group (71-80 years) had less weight as compared to the young old group. The BMI of the participants shows that both the age groups were belonging to the overweight category (Asian BMI cut-offs). Comparison between two genders showed that female participants had less height and weight as compared to the male participants but both the genders were belonging to the overweight category as per their BMI. There was no significance found between the

anthropometric measurements of the participants. Social isolation score was measured with the help of the UCLA (University of California, Los Angeles) loneliness scale and later it was compared between age groups and gender. It was observed that loneliness was more among the older group as compared to the younger older group and it was statistically significant ($p<0.05$). The gender wise comparison showed a similar level of loneliness and it was non-significant. The psychological health of the participants was measured with the help of Ryff's Psychological well-being scale and differentiated as age groups and gender. Psychological well-being score was found to be higher among the younger old people as compared to the older people which was statistically significant ($p<0.05$); whereas comparison between genders showed that males had higher psychological well-being score as compared to the females and it was non-significant. The physical activity and daily living activity scores was also considered in this study which showed that participants belonging to the age group 61-70 years were more active as compared to the older group and it was statistically significant (<0.05) whereas females were found to be more active as compared to the males.

The consumption of macronutrients was considered in this study and was compared between age groups and gender. It was observed that calorie intake of both the age groups was almost similar but it was lower as compared to the (RDA). The calorie intake of males were found to be higher as compared to the females but both the genders did not consume the calories as per their recommendations. Protein intake was found to be less in female participants as well as the participants belonging to the 71-80 years of age and it was very less as compared to RDA which allows the protein intake upto 0.8gm/kg body weight (51.88±2.3gm). Carbohydrates intake was almost similar in both the age groups and gender which was found to be near to the recommended amount. Intake of fats was observed to be higher among the male participants as compared to the females whereas comparison between age groups did not show any difference. The fiber intake among the participants was to be low in age group comparison as well as gender wise comparison and it was very less as compared to the recommended amount. There was no significance found between the macronutrient intake of the participants when compared as per age groups and gender.

4.1. Consumption of Food Groups by the Participants

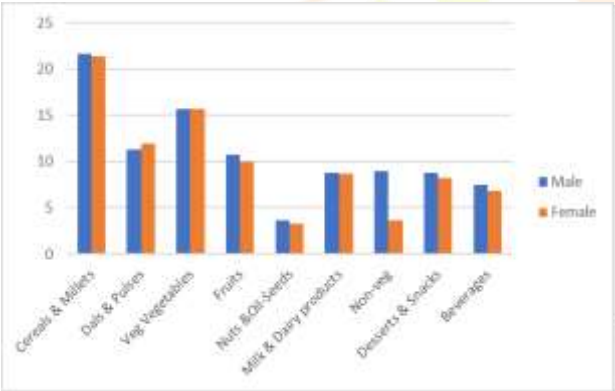

figure 1: difference between consumption of food groups by gender

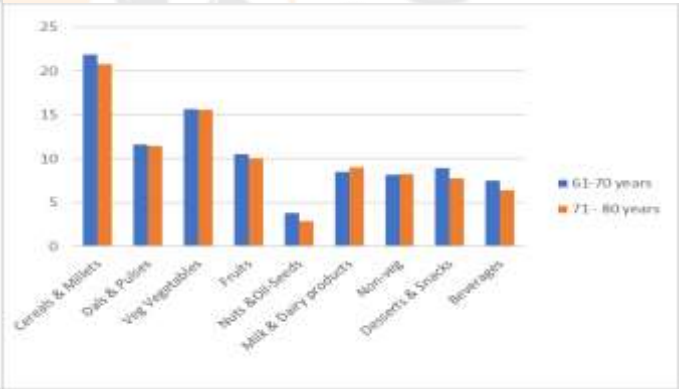

figure 2 : difference between consumption of two age groups

figure 1 and 2 shows the variations in the consumption of food groups when compared between gender and age group respectively. It can be observed that both the gender and age groups had almost high consumption of cereals. The consumption of nuts and oil seeds were found to be low in both comparisons between gender and age group. The consumption of all the food groups was found to be similar in both the gender and it was found to be non-significant. The significant difference was found among the age group wise comparison for the consumption of nuts and oils-seeds as well as for the consumption of milk and dairy products. ($p<0.05$).

4.2. Effect of Social isolation on Psychological Health, Physical Health and Dietary Patterns of the Participants

The effect of social isolation was studied separately among the age groups and gender to understand the difference between the effects.

table 2: effect of social isolation on psychological health, physical health and dietary patterns of the participants belonging to the age group 61-70 years

Variables	1	2	3	4	5	6	7	8	9	10	11
1.UCLA loneliness scale											
2. Psychological well-being	-.749**										
3. Physical activity	-.409**	.544**									
4. Cereals & Millets	-.040	.178	-.028								
5. Dals and Pulses	.173	-.050	-.289*	.542**							
6. Vegetables	-.085	.118	.214	.248*	.150						
7. Fruits	.050	.074	0.45	.263*	.064	.331**					
8. Nuts and Oils-seeds	-.271*	.285*	.075	.541**	.330**	-.056	.188				
9. Milk & Dairy Products	-.060	.095	-.166	.521**	.366**	-.067	.199	.611**			
10. Non-veg	.053	.000	-.229	.054	-.119	-.249*	.393**	.170	.207		
11. Snack and desserts	-.171	.260*	.104	.015	.262*	.080	.334**	-.016	-.111	-.027	
12. Beverages	-.030	.288*	.112	.427**	.435**	-.025	.216	.312*	.264*	.013	.374**

**Correlation is significant at level (p<0.01) 2-tailed.

*Correlation is significant at level (p<0.05) 2-tailed.

table 2 shows the effect of social isolation on different health aspects of participants belonging to the age group of 61-70 years. Loneliness was observed to be negatively affecting the psychological well-being (r= -.749**) as well physical activities (r= -.409**) of the participants which suggests that increase in loneliness can cause decline in psychological health and physical health of the participants. These results were found to be statistically significant at (p<0.01). Similarly loneliness was also found to be causing decline in consumption of cereals (r=-.040), vegetables (r=-.085), nuts and oils-seeds (r=-.271), milk and dairy products (r=-.060), snacks and dessert (r=-.171) and beverages (r=-.030). These results were found to be non-significant whereas the relationship between loneliness and consumption of nuts and oils-seeds was observed to be significant (<0.05).

table 3: effect of social isolation on psychological health, physical health and dietary patterns of the participants belonging to the age group 71-80 years

Variables	1	2	3	4	5	6	7	8	9	10	11
1.UCLA Loneliness Scale											
2.Psychological WellBeing	-.767**										
3.Activities of Daily Living & Physical Activities	-.038	.254									
4.Cereals Cereals & Millets	-.010	-.059	.103								
5.Dals & Pulses	-.320	.142	.131	.654**							
6.Vegetables	.032	-.032	.234	.418*	.555**						
7.Fruits	.078	.047	.040	.297	.098	.440**					
8.Nuts & Oil seeds	-.143	.216	.233	.273	.351*	.024	.110				
9.Milk & Dairy products	-.172	.188	.037	.301	.246	-.359*	-.065	.482**			
10.Non-veg	.063	.040	-.033	-.197	-.023	-.116	.088	-.013	-.011		
11.Desserts & Snacks	-.012	-.108	-.299	.017	.080	-.291	-.015	.169	.066	.360*	
12.Beverages	.054	.056	.170	.245	.401*	.154	-.012	.231	.148	.276	.406*

**Correlation is significant at level (p<0.01) 2-tailed.

*Correlation is significant at level (p<0.05) 2-tailed.

table 3 describes the consumption of food groups by participants belonging to the age group (71-80 years). It was observed that loneliness was negatively correlated with psychological well-being of the participants (r=-.767) and it was statistically significant at (p<0.01) whereas the negative correlation was also seen among loneliness and physical activity (r=-.038) but it was found to be non-significant. The food group consumption was found to be negatively associated with loneliness but it was observed to be non-significant.

table 2 and 3 both show that social isolation can have an effect on psychological health as well as ease in performing physical activities among the geriatric population in every age group whereas the effect on food group consumption can also be observed in both the age groups.

table 4 : effect of social isolation on psychological health, physical health and dietary patterns among male participants

Variables	1	2	3	4	5	6	7	8	9	10	11
1.UCLA Loneliness Scale											
2.Psychological WellBeing	-.773**										
3.Activities of Daily Living & Physical Activities	-.293*	.437**									
4. Cereals &	.083	-.014	-.052								

Millets											
5.Dals & Pulses	.067	.062	-.033	.554**							
6.Vegetables	.037	-.006	.309*	.103	.403**						
7.Fruits	.046	-.074	.010	.391**	.431**	.500**					
8.Nuts & Oil seeds	-.244	.214	.060	.525**	.353**	-.091	.153				
9.Milk & Dairy products	-.060	.090	-.276*	.391**	.124	-.417**	-.002	.459**			
10.Non-veg	-.050	.197	-.105	.130	-.034	-.079	.240	.169	.158		
11.Desserts & Snacks	-.027	-.002	-.031	-.016	.226	-.096	.175	.010	-.033	-.093	
12.Beverages	-.045	.209	.238	.401**	.480**	.163	.318*	.262	.169	.101	.302*

**Correlation is significant at level (p<0.01) 2-tailed.

*Correlation is significant at level (p<0.05) 2-tailed.

table 4 shows the effect of social isolation among the male participants. Loneliness was found to be negatively associated with psychological well-being (r=-.773) and activities of daily living (r=-.293) suggesting that increase in loneliness can cause decline in psychological health and ease in carrying out the daily living activities among the males and it was statistically significant (p<0.01 and p<0.05) respectively. The negative correlation was also observed between loneliness and consumption of nuts and oils-seeds (r=-.244), milk and dairy products (r=-.060), non-veg food (r=-.050), desserts and snacks (r=-.027) and for beverages (r=-.045). The correlation between loneliness and consumption of food groups were found to be non-significant.

table5: effect of social isolation on psychological health, physical health and dietary patterns among female participants

Variables	1	2	3	4	5	6	7	8	9	10	11
1.UCLA Loneliness Scale											
2.Psychological WellBeing	-.802**										
3.Activities of Daily Living & Physical Activities	-.455**	.681**									
4. Cereals & Millets	-.288	.358*	.223								
5.Dals & Pulses	-.076	.011	-.228	.635**							
6.Vegetables	-.145	.154	.113	.572**	.230						
7.Fruits	-.162	.292*	.210	.101	-.301*	.246					
8.Nuts & Oil seeds	-.316*	.426**	.354*	.406**	.336*	.055	.194				
9.Milk & Dairy products	-.107	.105	.080	.478**	.531**	.050	.215	.639**			
10.Non-veg	.184	-.277	-.205	-.224	-.109	-.318*	.304*	.040	.109		
11.Desserts &	-.311*	.362*	.106	.099	.178	-.065	.214	.143	-.065	.286	

Snacks											
12.Beverages	-.108	.343*	.224	.375*	.400**	-.074	-.105	.391**	.234	-.001	.505**

**Correlation is significant at level (p<0.01) 2-tailed.

*Correlation is significant at level (p<0.05) 2-tailed.

table 5 describes the effect of isolation observed among the female participants which showed that loneliness can affect psychological well-being (r=-.802) and physical activities (r=-.455) among females and this effect was observed to be statistically significant at (<0.01). The food group consumption was also observed to be affected by loneliness except for the consumption of nuts and oil seeds which was observed to be affected in males.

table 4 and 5 describes the difference in the effect of social isolation specifically on gender and both the genders were found to be affected by loneliness or isolation causing decline in their psychological health and physical activity performance.

4.3. Discussion

In the study, two age group categories belonging to geriatric population were considered and it was observed that (66%) participants were belonging to the age group of 61-70 years whereas there were only(34%) participants from 71-80 years of age. Among 100 participants, (54%) were males and (46%) were females. The economic status of the participants showed that (44%) subjects were retired and (16%) participants were either working as full time workers, half time workers or self-employed.

The anthropometric data showed statistical significance between weight and height of both the genders (p<0.05) whereas there was no significance seen between height and weight of the age groups. The BMI of the participants were found to be non significant in the age groups as well as genders.The general health parameter reported by the participants themselves showed that only (19%) participants had very good health but (6%) also mentioned their health as poor whereas only (33%) and (42%) subjects mentioned their health as fair and good respectively.

The social isolation among participants was measured with the help of the UCLA (University of California,Los Angeles) Loneliness scale which showed that the participants belonging to the age group 61-70 years has loneliness score lower than the participants belonging to 71-80 years indicating that it was statistically significant at (p=0.012, p<0.05) whereas there was no significance found between loneliness and genders. Both the genders had a similar score of loneliness around (49.98±10.83) among males and (49.54±4.52) in females. Similarly the psychological well-being was found to be high in younger old people (61-70 years) as compared to the older people (71-80years). These results were found to be similar to the study conducted in Japan in 2 phases that showed an increase in loneliness with increasing age (Gouda et.al, 2012). The psychological well-being factor was observed to be less in females as compared to males.This result was similar to the study conducted among the old age home which showed that males had better psychological health as compared to females and psychiatric illness was more prevalent among females as compared to males (Singh et al, 2012).

The dietary intake patterns measured with food frequency did not show major differences among the age groups and genders, but it was found to be statistically significant in consumption of beverages among both the age groups and for the consumption of the nuts and oil seeds in participants belonging to 72-80 years of age. There was no significance found between the food consumption patterns and gender. These results showed similarity with the study performed with the participants belonging to the >60 years of age which showed that people who live alone have reduced the number of meals as well as lower daily intake of protein, fruits and vegetables as compared to the subjects who live with the family (Ramic et.al,2011)

Dietary recall was collected to understand the dietary intake of macronutrient and micronutrients of the participants. It was found that calorie and protein intake was low as compared to the RDA (Recommended Dietary Allowance) for geriatric population. Carbohydrate intake was approximately meeting the daily recommendations but the fiber intake was found to be little less (21.28±10.11gm) as compared to RDA (30gm). Similarly calcium intake was also less among the participants.. The comparison between the

macronutrient and micronutrients intake among the age groups and genders did not show any significant results.

The effect of social isolation on psychological health, physical health and dietary patterns was studied among the age groups and genders separately and it was observed that the participants belonging to the age group 71-80 years had more statistical significance between isolation and psychological well-being and less significance between isolation and physical activity at level ($p<0.05$) as compared to the age group 61-70 which was found to be statistically significant at ($p<0.05$). The comparison between the effect of social isolation on psychological health and physical health was observed to be more in females ($p<0.01$) as compared males ($p<0.05$). The study performed by the Coyle et.al,2012 found the similar results that loneliness had a negative effect on the psychological and physical health of females but not on the males.

Social isolation also affected the consumption of food groups mainly cereals, dals and pulses, vegetables, fruits , milk & dairy products, nuts and oils-seeds and beverages but it was found to be non-significant ($p>0.05$). There was negative correlation between intake of different food groups and social isolation indicating that increase in isolation can cause reduction in dietary intake and it was observed to be significant only in the nuts & oils-seeds and milk & dairy products in females but no significance was found among males.

V. CONCLUSION

It can be concluded from the study that social isolation has a significant effect on psychological health as well as physical health of the geraitric population in both the male and females . The effect of social isolation on food intake was found to be non-significant.

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