International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor 2024: 7.101

Relationship Between Physical Activity and Health Outcomes in Elderly People - A Community Based Investigation

Dr. Sivamathi R.

M. Sc. (N) Ph. D. Professor, RVS college of Nursing, Kannampalayam, Coimbatore
Email: *sivamathi.senthil2005[at]gmail.com*

Abstract: ***Physical activity is extremely vital for all humans. Due to technology advancements, there is now a low level of physical exercise. As a result, physical activity decreases, resulting in sickness in the individual. Physical activity is necessary to provide energy. In addition to being beneficial to our health, physical activity serves to refresh the mind, improve focus, improve blood circulation, and increase the productivity level of the elderly. Aims and objectives: To investigate the relationship between physical activity levels and health outcomes (physical and mental) in elderly people. Materials and methods: This cross - sectional study comprised 108 elderly individuals; physical measurements, including height, weight, waist, and hip circumference, were taken using standard measurements methods; physical activity was evaluated using a 4 - point Likert scale; and scores were interpreted. Results: The majority of research participants 49, or 45.4% were highly active. Medium and low activity were seen in 41 samples (38.0%).18 (16.7%) of the population were physically inactive. The degree of physical activity among elderly individuals was statistically significantly correlated with their mental and physical health (r = 0.02 p < 0.03) and physical health (r = 0.06 p < 0.01). Conclusions: A healthy body weight, strong bones, muscles, and joints are all maintained by regular exercise, which also guards against the onset of heart disease, stroke, high blood pressure, diabetes, joint issues, and some types of cancer. Individuals' occupations and lifestyles should be taken into consideration when giving physical exercise advice.***

Keywords: elderly people, physical activity, physical health, mental wellness

1. Introduction

Physical activity is widely seen as necessary because it allows people to meet the demands of modern life. One aspect of daily life is movement, which satisfies the physiologically conditioned demand to engage in movement activities. It impacts well - being and daily productivity; it can also lower medical expenses. Because sedentary lifestyles raise BMI, people are more likely to be overweight or obese. Premature death is one of the biggest health risks that must be taken into account, and it is caused by a lack or defect in regular physical exercise.

Exercise and physical activity on a regular basis have been demonstrated to improve adult quality of life and benefit a number of physiological systems. In order to prevent chronic illnesses and preserve good health, it is advised that adults engage in moderate - intensity exercises for an average of 30 minutes most days of the week. Performing moderate physical activity at an average of 3–6 metabolic equivalents of task (METs) is advised for senior persons. This is similar to brisk walking at a pace of 3–4 miles per hour. Even with these suggestions, a lot of adults—especially older adults—choose to stay inactive. Of the adult population, 25% were sedentary and over 60% did not engage in physical activity.

2. Need for the Study

According to the World Health Organization, one in every four persons does not reach the global recommendation for physical exercise. If the world's population become more active, it may prevent up to 5 million deaths every year. People who are insufficiently active have a 20% to 30% higher risk of death than people who are appropriately active.

According to an ICMR survey, Indians spent an average of 9.1 minutes in intense activity. Urban Indians moved less than their rural counterparts—those in urban regions spent 5.5 minutes while those in rural areas spent 10.9 minutes in intense activity. Men spent an average of 14.7 minutes and women 3.1 minutes in a vigorous activity.

WHO found a clear link between death rates and lifestyle behaviors. A sedentary lifestyle is projected to cause 1.9 million deaths and 19 million disability - adjusted life years worldwide. The rising prevalence of diabetes and obesity in India can be linked, at least in part, to higher levels of physical inactivity. A large proportion of people in India are inactive, with less than 10% engaged in leisure physical activity.

Physical inactivity is the fourth leading cause of death worldwide, accounting for around four to five million preventable deaths. Smoking, high blood pressure, and a high body mass index (BMI) are the only risk factors for non - communicable illnesses that outrank physical inactivity.

Objective of the study:

1) To identify the level of physical activity among elderly people. in the community.
2) To assess the physical and mental health of elderly people residing in selected rural community area.
3) To investigate the relationship between physical activity levels and physical and mental health in elderly people.
4) To find out the association between demographics, physical measures, and physical activity levels among elderly people.

Hypothesis

H1: There is a significant positive relationship between physical activity levels and health outcomes of elderly people

H2: There is a significant association between demographic variables and physical activity of elderly people

3. Study Design and Data Collection

This was a cross - sectional study in which a survey method was used to collect data on physical activity levels, demographic factors, and health outcomes from a sample of older persons at a specific moment in time. The study used a non - probability convenience sample of 108 elderly adults aged 50 to 70 years from the Ravathur rural community area of Coimbatore. Data were collected through a cross - sectional survey. Only subjects who provided written consent and had no serious psychiatric or neurological issues were chosen. Data was gathered by providing a standardized questionnaire to each study participant. The average time spent collecting data from each elderly person was 30 minutes, followed by physical measurements such as height, weight, waist circumference, and hip circumference were assessed.

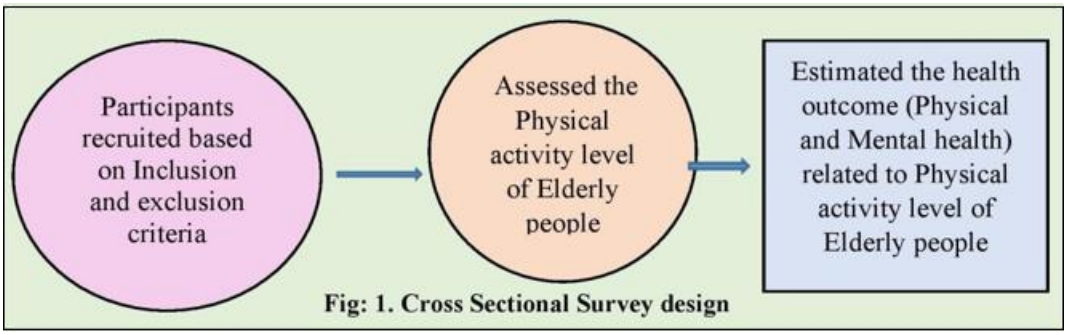

Fig: 1. Cross Sectional Survey design

Assessment Tools:

The tool for this study is made up of five parts:

Part - 1

Section A: Demographic Information for elderly people

Section - B: Elderly people's health history, including clinical history, degree of stress, exercise pattern (type, frequency, and time), sleeping pattern, and working hours.

Part 2: Assessing Physical Activity: This was accomplished by employing a four - point likert scale. This comprises of ten questions about the physical activity of older individuals. It includes sitting activities, walking exercises, light, moderate, and vigorous activities, flexible activities, and home chores. Each question has four responses: never, seldom, occasionally, and often.

Part 3: Physical Measurements**:** 1. Body size measurements: height, weight, BMI, 2. Body composition measurements: waist circumference, hip circumference & 3. Body proportion measurements: waist - to - hip ratio, waist - to - height ratio were taken and interpreted by using the standard scale.

Part 4: Physical Health Assessment: The physical well - being of elderly persons was examined using a 10 - item well - being scale. It encompasses managing weight, engaging in exercise, feeling good about your body, sleeping habits, avoiding infectious disease, health disease, energy level, and utilizing health services.

Part 5: Assessing Mental health: It consists of ten questions. It comprises personal routines, expression of feelings, depression, anxiety, stress level, adaption, and coping abilities of elderly individuals.

Statistical Analysis and Data Processing:

The data was analyzed using SPSS statistical software version 20. The respondents' general characteristics and physical activity were calculated using numbers, percentages, means, and standard deviations. Pearson's correlation coefficient was used to investigate the relationships between physical activity and physical and mental health. The association between socio - demographic traits, physical measurements, and physical activity was investigated using the one - way ANOVA approach.

Table 1: Frequency and Percentage Distribution of Subjects According to Socio - Demographic Variable

S. No	Socio - Demographic Variables		Frequency	Percentage
1	Age	50 – 55 years	25	23.1
		56 – 60 years	26	24.1
		61 – 65 years	28	25.9
		66 - 70 years	29	26.9
2	Gender	Male	55	50.9
		Female	53	49.1
3	Religion	Hindu	92	85.2
		Christian	14	13
		Muslim	2	1.9
4	Marital status	Married	101	93.5
		Divorcee/Widow/widower	7	6.5
5	Type of family	Nuclear	98	90.7
		Joint	10	9.3

6	Education	Non formal education	7	6.5
		Primary education	12	11.1
		Middle school	30	27.8
		High school	30	27.8
		Intermediate / diploma	19	17.6
		Graduate or Postgraduate	8	7.4
		Professional degree	2	1.9
7	Employment Status	Unemployed	21	19.4
		Unskilled workers	53	49.1
		Semiskilled	25	23.1
		Skilled workers	7	6.5
		Clerical/ shop owners/ farmers	2	1.9
8	Monthly income	< 10, 000	43	39.8
		Rs 10, 001 - 15, 000	47	43.5
		Rs 15, 001 - 20, 000	15	13.9
		Rs 20, 001 - 30, 000 above	3	2.8
9	Family history of chronic diseases	Yes	23	21.3
		No	85	78.7

Table 2: Frequency and Percentage Distribution of Subjects According to Physical Measurements

S. No	Physical Measurements		Frequency	Percentage
1.	Body mass index	Below 18.5	2	1.9
		18.5–22.9	83	76.9
		23 –24.9	9	8.3
		25 –29.9	9	8.3
		> 30	5	4.6
2.	Waist Hip Ratio	**Male**		
		Below 0.90inches	43	39.8
		0.90 inches	9	8.3
		Above 0.90inches	3	2.8
		Female		
		Below 0.85inches	37	34.3
		0.85 inches	13	12.0
		Above 0.85inches	3	2.8

Table 3: Frequency and Percentage Distribution of Subjects According to Physical Activity

S. No	Physical activity	Frequency	percentage
1	Inactive	18	16.7
2	Medium & low activity	41	38
3	High active	49	45.3

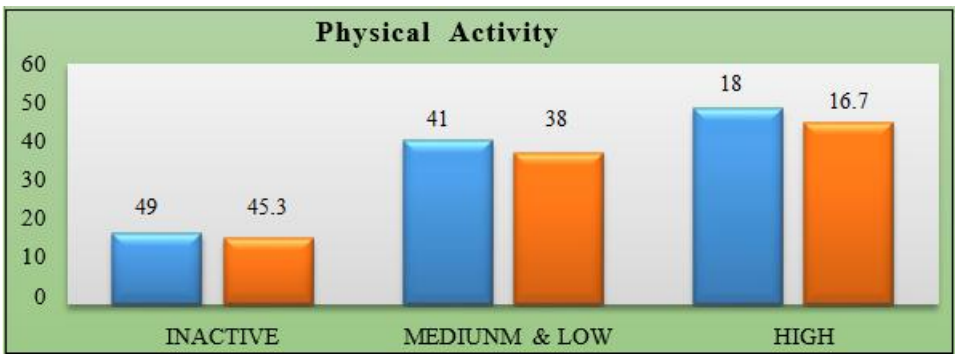

Table 4: Frequency and Percentage Distribution of Subjects According to Level of Physical wellness

S. No	Level of Physical wellness	Frequency	Percentage
1	Minimum Physical Wellness	31	28.7
2	Moderate Physical Wellness	50	46.3
3	Optimum Physical Wellness	27	25.0

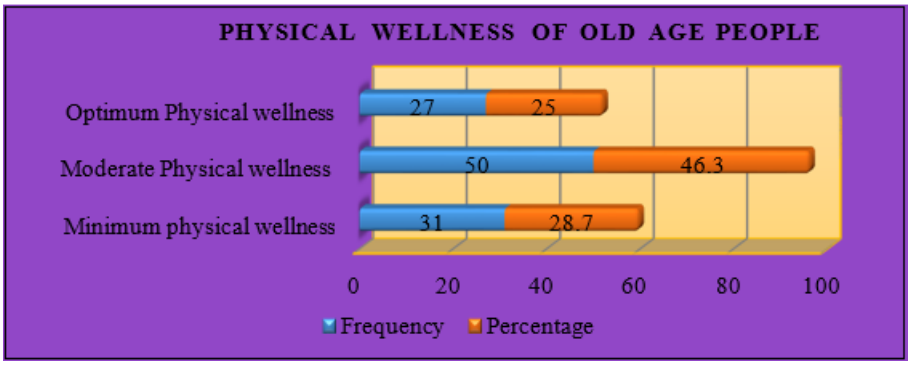

Table 5: Frequency and Percentage Distribution of Subjects According to Level of Mental wellness

S. No	Level of Mental wellness	Frequency	Percentage
1	Minimum Mental wellness	31	28.7
2	Moderate Mental wellness	34	31.5
3	Optimum Mental wellness	54	50.0

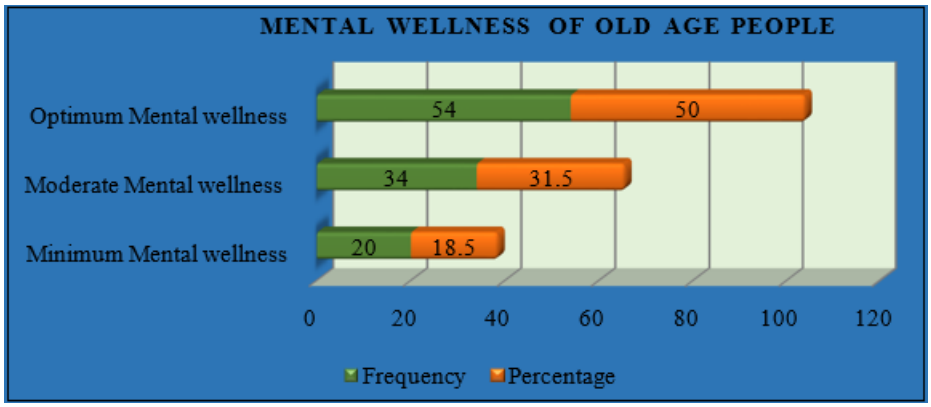

Table 6: Mean, Standard Deviation, Mean Percentage and Variance physical activity & Physical health & mental health

Variables	Mean + S. D	Mean %	Variance
Physical Activity	13.81 + 4.22	21	17.87
Physical health	24.09 + 8.91	42	77.71
Mental health	29.16 + 9.11	42	83.12

Table 7: Relationship between Physical activity and Physical and mental health of elderly people

Variables	r value	p value
Physical activity - Physical health	0.2052	$p < 0.0331$
Physical activity - Mental health	0.6462	$p < 0.0001$

Table 7 shows a statistically significant positive correlation was observed between physical activity scores and physical health ($r = 0.2052$, $p < 0.0331$) and mental health ($r = 0.6462$, $p < 0.0001$) elderly people

Table 8: Level of Association between Physical activity and Socio – Demographic Variable

Socio – Demographic Variables		N	$\bar{X}$ ±S. D	SS	df	F	Sig
Age	50 – 55 years	25	2.44± 0.71	4.766	3	3.098	0.030*
	56 – 60 years	26	2.54± 0.64				
	61 – 65 years	28	2.21± 0.83	53.336	104		
	66 - 70 years	29	2.00± 0.65				
Gender	Male	55	2.22±0.73	0.531	1	0.978	0.325NS
	Female	53	2.36±0.73	57.57	106		
Religion	Hindu	92	2.30±0.73	1.266	2	1.17	0.314NS
	Christian	14	2.29± 0.72	56.835			
	Muslim	2	1.50±0.70				
Marital Status	Married	101	2.32±0.07	1.383	1	2.585	0.11NS
	Widow/ widower	7		56.719	106		
Type of Family	Nuclear	98	2.33±0.71	1.651	1	3.1	0.08NS
	Joint	10					
Educational Status	Non formal education	7	1.57± 0.53	14.676	6	5.689	0.001*
	Primary education	12	1.83± 0.71	43.426	101		
	Middle school	30	2.03± 0.71				

	High school	30	2.53± 0.57				
	Post – high school	19	2.53± 0.77				
	UG/PG	8	2.88± 0.35				
	Professional degree	2	3.00± 0.00				
Employment Status	Unemployed	21	1.76± 0.70	8.27	4	4.273	0.003*
	Unskilled workers	53	2.42± 0.66				
	Semiskilled	25	2.32± 0.74				
	Skilled worker	7	2.57± 0.78				
	Clerical/ shop owners/farmers	2	3.00± 0.00				
Monthly Income	< 10, 000	43	2.21± 0.83	801	3	0.485	0.694NS
	Rs 10, 001 - 15, 000	47	2.36± 0.67				
	Rs 15, 001 - 20, 000	15	2.33± 0.61				
	Rs 20, 001 - >30, 000	3	2.00± 1.00				
Family history of	Yes	23	2.43± 0.66	0.638	1	1.177	0.280NS
	No	85	2.25± 0.75	57.464	106		

Table 9: Level of Association between physical activity and Physical Measurements

Physical Measurements		N	$\bar{X}$ ± S. D	SS	df	F	Sig
Body mass index	Below 18.5	2	2.50 ±0.70	16.672	2	10.363	0.001
	18.5–22.9	63	2.60 ±0.55				
	23 –24.9	13	2.00 ±0.70	41.429	105		
	25 –29.9	20	1.75 ±0.71				
	> 30	10	1.70 ±0.82				
Waist Hip Ratio	**Male**					6.305	0.001
	< 0.90 inches	43	2.35 ±0.68	13.717	5		
	0.90 inches	9	1.89 ±0.78				
	>0.90 Inches	3	1.33 ±0.57				
	Female						
	< 0.85 inches	37	2.62 ±0.59	44.385	102		
	0.85 inches	13	1.85 ±0.68				
	>0.85 inches	3	1.33 ±0.57				

4. Results

Table1: The sample of 108 participants shows that the majority of the elderly were between the ages of 61 and 70 years.55 (50.9%) elderly persons were male, while 53 (49.1%) were female. In terms of religion, the majority of 92 (85.2%) identified as Hindu.101 (93.5%) elderly people were married.98 (90.7%) elderly persons live in nuclear families. Most of them lived in rural communities. Older people's education levels vary, with the majority (27.8%) having a high school diploma. Regarding employment status, 53 (49%) elderly adults were unskilled laborers. In terms of income, most of the elderly lived on less than Rs.10, 000 per month. The majority of elderly adults (79%) have no family history of chronic. diseases. Physical activity of older individuals (Table: 3) indicates the majority of study participants, 49 (45.4%), were highly active. There were 41 (38.0%) samples with medium to low activity.18 (16.7%) of the population was inactive. Data on the physical health status (Table: 4) showed the study's samples with a moderate degree of physical health were 50 (46.3%), whereas 31 (28.7%) had a minimum physical health status.27 (25.0%) people had the optimum physical health. The data on mental health status (Table: 5) revealed that the study comprised 54 (50.0%) samples with optimum mental health and 34 (31.5%) samples with intermediate mental health. There were 20 (or 18.5%) samples with poor mental health. There was a significant correlation (Table: 7) between physical health ($r = 0.2052$, $p < 0.0331$) and mental health ($r = 0.6462$, $p < 0.0001$) of elderly people's physical activity levels. The socio demographic factors of Age, education, and employment were all found to be statistically significant predictors of physical activity (Table: 8) the age has a F value of 3.09 with degrees of freedom (3, 104). This result was statistically significant, with $p < 0.03$. F value for education was 5.68, with degrees of freedom (6, 101). This result was highly statistically significant, with $p < 0.001$. The F value for employment was 4.27, with degrees of freedom (4, 103). This result was highly statistically significant, with $p < 0.003$. Elderly people's physical activity has a significant association (Table: 9) with their BMI ($p < 0.001$) and waist hip ratio ($p < 0.001$).

5. Discussion

The findings are consistent with Anjana R. M. 's (2014) study, which found that 54.4% of the 14227 adults evaluated were inactive, 31.9% were active, and 13.7% were extremely active. Subjects were less engaged in urban areas than in rural settings. Men were significantly more involved than women. Pucci, G. C. M. F., supported these findings. The majority of the studies analyzed were cross - sectional (68%), followed by 18% experimental, 8% prospective follow - up cohort, and 5% mixed - design (cross - sectional and longitudinal). The SF - 36 questionnaire was the most commonly employed to assess quality of life (71%), and physical activity was self - reported in 82% of the studies included. Higher levels of physical activity were associated with improved perceptions of quality of life in the elderly, apparently healthy adults, and people with various clinical problems. Hak Kyun Kim (2021) discovered that meeting both aerobic and muscular exercise criteria resulted in the strongest favorable associations between adherence to physical activity guidelines and mental health. In contrast to our findings, Reichert et al. (2016) found that lack of money and exhaustion are the most significant barriers to physical

exercise in individuals with low socioeconomic level and lower education (7 years) from southern Brazil. Chung, W. C. (2021) disclosed Correlation between physical activity and mental health; female PA was associated with stress. Males' physical activity levels were strongly associated to overall mental health. In terms of gender and physical activity, ladies who exercise have a lower BMI and are more satisfied with their subjective body image. Females and males demonstrated that physical activity affects perceived stress. These findings show that boosting physical activity may improve mental health.

Delimitations

The study is delimited to old age people and the findings may not be applicable to younger populations The study is delimited to a survey method, and the findings may not be applicable to other research methods (e. g., experimental, qualitative).

6. Implications

This study's findings can assist health care practitioners plan community - based programs to increase physical activity among the elderly, such as walking clubs and exercise classes. Healthcare systems can be adjusted to include physical activity assessments and prescriptions in routine care for the elderly. Community organizations can educate elderly people on the benefits of physical activity and how to incorporate it into their everyday lives. Community outreach initiatives can be used to educate the elderly about the benefits of physical exercise and how to access physical activity programs and resources.

7. Recommendations

- Longitudinal studies can be conducted to examine the long - term effects of physical activity on health outcomes in old age people.
- Intervention studies can be conducted to evaluate the effectiveness of physical activity programs and interventions in improving health outcomes in old age people. Healthcare systems can be modified to incorporate physical activity assessments and prescriptions into routine care for old age people.
- Studies can be conducted to examine the underlying biological mechanisms by which physical activity affects health outcomes in old age people.

8. Conclusion

Old age is a very important stage in anyone's life. People adopt a variety of lifestyle patterns as they age, which have a significant impact on their health outcomes. The current study was conducted to evaluate how physical activity affects the health and wellness of elderly persons. The findings reveal that physical activity among the elderly is favorably and significantly connected with their physical and mental health. Physical activity or exercise can help us stay healthy and lower our risk of getting diseases such as type 2 diabetes, cancer, and cardiovascular disease. Physical activity and exercise can provide both immediate and long - term health advantages. Most significantly, consistent physical activity can boost your quality of life. Regular exercise improves mental health, emotional well - being, and reduces the risk of mental disease. Exercise is beneficial to elderly people since it improves not only our mood, focus, and alertness, but also our cardiovascular and total physical health. Overall, physical activity is critical for sustaining physical, mental, and emotional health in old age. Regular physical activity can assist older persons preserve their independence, mobility, and overall well - being.

References

[1] Anjana, R. M., Pradeepa, R., Das, A. K., Deepa, M., Bhansali, A., Joshi, S. R., & ICMR– INDIAB Collaborative Study Group. (2014). Physical activity and inactivity patterns in India–results from the ICMR - INDIAB study (Phase - 1) [ICMR - INDIAB - 5]. International Journal of Behavioral Nutrition and Physical Activity, 11, 1 - 11.

[2] Barnidge EK, Radvanyi C, Duggan K, Motton F, Wiggs I, Baker EA, Brownson RC. Understanding and addressing barriers to implementation of environmental and policy interventions to support physical activity and healthy eating in rural communities. Journal of Rural Health.2013; 29 (1): 97–105

[3] Knapik, A., Brzęk, A., Famuła - Wąż, A., Gallert - Kopyto, W., Szydłak, D., Marcisz, C., & Plinta, R. (2019). The relationship between physical fitness and health self - assessment in elderly. *Medicine*, *98* (25), e15984.

[4] Pucci, G. C. M. F., Rech, C. R., Fermino, R. C., & Reis, R. S. (2012). Association between physical activity and quality of life in adults. *Revista de saude publica*, *46*, 166 - 179.

[5] Petrenya, N., Rylander, C., & Brustad, M. (2019). Dietary patterns of adults and their associations with Sami ethnicity, sociodemographic factors, and lifestyle factors in a rural multiethnic population of northern Norway - the SAMINOR 2 clinical survey. BMC Public Health, 19 (1), 1 - 15.

[6] Rasciute, S., & Downward, P. (2010). Health or happiness? What is the impact of physical activity on the individual?. Kyklos, 63 (2), 256 - 270.

[7] Kim, W. K., & Chung, W. C. (2021). Relation between body factors, physical activity, and mental health among adult women and men: The Korea national health and nutrition examination survey. *Indian Journal of Public Health*, *65* (2), 116 - 123.

[8] Seema, H. L. J. (2022). Quality Of Life Among Old Age People: Role Of Subjective Well - Being And Religiosity. *Journal of Positive School Psychology*, *6* (11), 707 - 715.