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A Comprehensive Investigation of the Key Elements that Foster and Hinder Active Aging Level in Community Dwelling Older Adults of Pakistan: An Analytical Study

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ABSTRACT

Study Aim: This study aimed to investigate active aging status, and key elements that foster or hinderence of active aging among older adults in Pakistan.
Study Design: A cross-sectional study was conducted from June 2022 to November 2022 in the six districts of Khyber Pakhtunkhwa, Pakistan. The sample size was 230 older adults, aged 60 and above, calculated using Ravesoft software. Residents who could understand the local language (Urdu) and were independent in Activities of Daily Living (ADL) were included.
Results: Participants' ages ranged from 66 to 70 years. A significant number (79.6%) lived in a joint family system. Participants reported a medium level of active aging at 79% and a moderate level of well-being at 64%. Additionally, 32% rated their current health status poor, while 43% experienced mild to moderate levels of depression. A significant negative association was found between non-communicable diseases, ethnicity, gender, age, marital status, education, source of income, and active aging level ($P < 0.005$). The regression analysis explains the fostering association between demographic variables such as economic status, education level, male gender, and subjective well-being with self-reliance ($R2 = 0.05$), learning and integration into society ($R2 = 0.72$), healthy lifestyle ($R2 = 0.77$), spiritual wisdom ($R2 = 0.81$), social contribution ($R2 = 0.82$), economic security ($R2 = 0.88$), and strengthening family ties ($R2 = 0.87$).
Conclusion: Pakistani older adults have a moderate level of active aging. access to healthcare, social, and financial support can contribute to enhancing the active aging status.

Keywords: Cross-sectional, Active Aging, Well-being, Associated factors, Community-dwelling, older adults.

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INTRODUCTION

As the global population is undergoing a significant demographic change with the increase in older people (age 60 and older) the global population is undergoing a significant demographic change with the increase in older people (age 60 and older) (WHO, 2002). The United Nations estimates that the number of people aged 60 and over is expected to reach 2.1 billion by 2050, a significant increase from 962 million in 2017. This highlights the need to prioritize strategy development and investigate factors that promote healthy aging and an active lifestyle for older people.

Pakistan is also on the verge of rapid growth in its aging population (Akbari et al., 2009; Bibi et al., 2023). About 15 million people in Pakistan are over the age of 65, which is about 7% of the total population. Additionally, about 40% of the country's households comprise the elderly. This demographic trend poses new challenges as well as opportunities for the country's government and policymakers to build a healthy community as it is the world's sixth most populous nation. (Anwar & Masood, 2022; WHO, n.d.). The concept of active aging covers various aspects of the physical, mental, and social well-being of older people, which significantly affects their overall quality of life. Understanding the level of active aging in societies has become extremely important given the growing population of older people around the world. (Biernat et al., 2023). The purpose of this cross-sectional study is to estimate the level of active aging among the elderly in Pakistan. It also aims to examine the variables that affect their participation in socially productive activities and their quality of life.

Older people in Pakistan face a number of problems, such as high prevalence of chronic diseases, lack of access to health care, social isolation and a high incidence of mental health problems. For example, a previous study reported a 48% prevalence of depression. (Godil et al., 2017), Lack of social support and unfavorable environment increase the likelihood of fall-related disabilities, as reported in previous studies(Akbari et al., 2009; Khattak et al., 2021). The physical and social environment, with personal characteristics such as sex, ethnicity, and socioeconomic status, play an important role in shaping the aging experience. Furthermore, it is clear that older people in Pakistan do not regularly participate fully in physical, social, and mental activities, which encourages sitting habits, and increases the likelihood of one's health, dependent care, and mental health problems and chronic diseases. (Akbari et al., 2009; Zainab et al., 2021). According to Bowling et al. (Bowling, 2007) Older people should maintain their physical health, cognitive functions, and social connections to improve their overall health status. According to Durham et al.(Durham, NC, USA: United States Environmental Protection Agency;, n.d.)Engagement in meaningful activities and social interactions is associated with better mental health and a lower risk of cognitive impairment. Older people who regularly engage in physical activity have better physical health and are less likely to suffer from chronic diseases. (Stathi et al., 2019).

To address these challenges and take advantage of the opportunities available, the World Health Organization (WHO) launched an active policy framework on ageing in 2002. The framework aims to develop a healthy society globally and defines active ageing as the best opportunity to participate in leisure activities, access to basic health care services, achieve financial security and live independently (Caprara et al., 2013a). Policymakers, healthcare providers, and communities must prioritize strategies that promote healthy lifestyles, improve access to health care, and promote social support for older adults (Akbari et al., 2009). A comprehensive understanding of the current status of active ageing and its contributing factors can inform interventions aimed at improving the quality of life of older people in Pakistan (Laila Akber Cassum1*, Keith Cash2, Waris Qidwai3 and Samina Vertejee1, 2020).The aging process brings about various degenerative biological changes in the life of an individual. However, it is clear that while some older people are still as active and continue to participate and

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contribute as young people, others may not (Caprara et al., 2013a). In developing countries such as Pakistan, the quality of life of most older people is poor. They often develop early disability and rely on care due to debilitating conditions such as muscle weakness, sensory loss, osteoporosis, joint stiffness, and memory problems (Godil et al., 2017; Jalal & Younis, 2014). In previous studies, the incidence of mental health problems such as depression was 28% (Godil et al., 2017).

Frailty and pre-frailty are serious problems that affect the overall health and daily activities of older people (Biernat et al., 2023; Brach et al., 2023). A number of studies conducted in different countries have provided insights into the dynamics of active ageing, broadened our understanding of the phenomenon, and explored the current status of active ageing in Pakistan. Different countries such as Sweden, Norway, the United States, Canada, and Denmark have embraced the concept of active ageing and incorporated it into their public policies and social programs (Ahrentzen, 2010; Brunzini et al., 2023; Durham, NC, USA: United States Environmental Protection Agency;, n.d.). In these countries, there has been a focus on developing age-friendly environments that support older people's participation in physical activity, social interaction, lifelong learning, volunteering and participation in water activities. For example, Sweden's "Age-Friendly Cities and Communities" initiative encourages the development of walkable communities, accessible public transport, and recreation centers that are fit for the needs of older people (Barrio et al., 2018, 2018; Caprara et al., 2013）. Such programs increase older adults' participation in physical activity and the community, thereby improving their overall well-being and quality of life (Aster, 2013; Au et al., 2015; Oh et al., 2017）. Similarly, community initiatives in the U.S. to support active aging have increased. Seniors have the opportunity to keep them physically and socially healthy through programs such as volunteer opportunities, health workshops, and group activities at senior centers. In the United States, the Senior Citizens Program engages seniors in volunteer work that allows them to give back to their communities while remaining active and connected (Au et al., 2015; Belgrave, 2011).

Many studies have investigated active ageing and developed strategies to promote active ageing in different countries, including China, Japan, Taiwan, Canada, the United States, the United Kingdom, Singapore, Thailand, and others (Au et al., 2015; Caprara et al., 2013a; Durham, NC, USA: United States Environmental Protection Agency;, n.d.; Zhang Chichen, Cai Yuan, Xue Yaqing, et al., 2020), But Pakistan's active ageing has received little attention. By carefully examining the level of active ageing and its impact in the cultural, social, and economic context of Pakistan, this study aims to close this gap and will provide a roadmap for developing further active ageing strategies. In order to ensure the well-being and quality of life of older persons, active ageing must be assessed and advocated in light of the changing demographics of the ageing population.

Understanding the status and associated factors of active ageing among older adults in Pakistan is critical to developing effective policies and interventions to promote healthy communities. The results of the study will contribute to a broader understanding of active ageing in Pakistan and assist policymakers and public health workers in developing strategies to promote a higher quality of life for older people in the country.

LITERATURE REVIEW

The concept of active aging has gained increasing attention in recent years as the global population undergoes a demographic shift, with a notable rise in the number of older adults. The World Health Organization (WHO) defines active aging as the process of optimizing opportunities for health, participation, and security to enhance the quality of life as people age(Caprara et al., 2013b).This

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framework emphasizes to identify active aging opportunities and the importance of engaging older adults in meaningful activities to ensure access to healthcare, financial security, and social support.
Global Perspectives on Active Aging.

Countries such as Sweden, Norway, Canada, and the United States have developed robust policies and initiatives to support active aging. Programs like the "Age-friendly Cities, aging litracy and Communities" initiative in Sweden have been instrumental in fostering environments that encourage physical activity, life modifications, social interaction, and lifelong learning among older adults. Older adults with join family participated well in the active aging activities in this study(Barrio et al., 2018). Similarly, in the United States, community-based initiatives such as the Senior Corps program promote volunteerism, training to community health leaders and group activities, enabling older adults to remain socially engaged ,physically active and reduce burden of chronic illness (Belgrave, 2011). Smart phone users were more socially engaged and exhibited less mental health problems in the study which reflect the important of orientation with communication technology in old age.

These efforts highlight the critical role of creating supportive environments that enable older individuals to lead active and fulfilling lives. Studies conducted in Japan, Singapore, and Thailand further underscore the importance of culturally tailored interventions in promoting active aging (Bibi et al., 2023).

In contrast to developed nations, the concept of active aging in Pakistan remains underexplored. There is an urgent need to assess the current status of active aging among older adults and understanding about factors hindrance to the active aging. The country's aging population, which constitutes approximately 7% of the total population, faces numerous challenges. Older adults in Pakistan are disproportionately affected by chronic diseases, mental health issues (with a prevalence of 28-48%), and social isolation(Akbari et al., 2009; Godil et al., 2017). These challenges are exacerbated by limited access to healthcare and inadequate social support systems(Khattak et al., 2021; Zainab et al., 2021).
Environmental and personal factors, including socioeconomic status, ethnicity, education, gender, and availability of learning opportunities significantly influence the aging experience in Pakistan. Older adults often encounter barriers to participating in physical, social, and cognitive activities, contributing to sedentary lifestyles and a higher risk of frailty and dependency (Akbari et al., 2009; Biernat et al., 2023).

The WHO's active aging policy framework offers a roadmap for addressing these challenges. Implementing strategies to enhance healthcare access, foster social inclusion, and encourage participation in physical and cognitive activities can improve the quality of life for older adults in Pakistan. For example, creating age-friendly environments, similar to those in developed nations, could significantly enhance engagement and well-being among older adults (Estebsari et al., 2020). Research in Pakistan has begun to shed light on the factors influencing active aging, yet significant gaps remain. Studies highlight the potential benefits of integrating social and physical activities into daily life, as evidenced by international initiatives(Kyu et al., 2018).. However, these findings have not yet been systematically applied to the Pakistani context.
Understanding the cultural, social, and economic dimensions of aging in Pakistan is crucial for developing effective interventions. Insights from global practices can be adapted to align with Pakistan's unique needs, ensuring that policies and programs are both relevant and sustainable. The findings of ongoing research, such as the current analytical study on active aging in Pakistan, will provide valuable data to guide future efforts.

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METHODOLOGY

Study Design and Setting: This study employed a descriptive cross-sectional design and was carried out in the six largest districts of Khyber Pakhtunkhwa (KP), namely Peshawar, Mardan, Nowshera, Timergara, Chikdara, and Chitral. The study was conducted from June 2022 to November 2022. G Power sample size calculation software was used to determine the sample size, taking into account the desired level of significance (alpha), power (1-beta), and effect size. Alpha (i.e., α =0.05, beta = 20%, with attrition rate power =0.8). A non-probability convenient sampling technique was used to collect data from the 230 participants.

Inclusion and Exclusion Criteria: The following inclusion criteria were carried out1) older adults age 60 years and above;2) without audio and visual impairment;3) not currently hospitalized;4), local residence with the apprehension of the local language (Urdu);5) those not critically ill, and the individual who was independent for Activities of Daily Living(ADL) and capable of walking at least 200 m were included in this study. Exclusion comprised individuals with disabilities, critically ill, cognitively impaired, and refused to participate in this study.

Data Collection Tools: Data were collected using validated and well-structured scales such as:

Self-rated Health status (SRHS): Self-rated Health status (SRHS) is a subjective assessment of one's overall health status (Xu et al., 2019). The single item is "In general, how do you consider your overall health?" using a 5-point scale (1 = very poor to 5 = very good). The average rating of 3.5 and above is considered a fair level of health status (Xu et al., 2019). It is valid and highly reliable for assessing subjective health status (a=0.76). (Abolghaseminejad et al., 2023; Wuorela et al., 2020), validated in various settings(EuroQol Registration, n.d.).

Sleep quality: Sleep quality was measured with a validated and reliable (Cronbach Alfa 0.86), sleep quality visual analogue scale. The participants were asked to rate their sleep quality on a scale of for the past seven days. Each number corresponds to a category that describes how you perceive your sleep quality. The categories are as follows: 0 - Terrible, 1-3 - Poor, 4-6 - Fair, 7-9 - Good, and 10 - Excellent. It is important to note that a cutoff point of less than 8 is considered poor sleep(Snyder et al., n.d.), his cutoff point is typically used for illiterate participants(Faith S. Luyster & et al, 2015).

Active Aging Scale: The Active Aging Scale-Thai, developed by Thanakwang et al. in Thailand, is a reliable and validated tool (α=0.91) (Zhang Chichen, Cai Yuan, Xue Yaqing, et al., 2020). This scale consisted of 34 items with seven components. The scale uses the Likert 4-level scoring method. The total score on the scale ranges from 36 to 116, A score of 34 to 64 indicates that the level of active aging is low, 65- to 125 points indicates that the level of active aging is moderate and higher than 126 points indicates the higher the score, the higher the degree of positive aging(Thanakwang & et al, 2014).

Geriatric Depression: The 15-item Geriatric Depression Scale (GDS-15) was used to assess whether older adults had depressive symptoms(Godil et al., 2017). The total scores from 0 to 4 are considered normal, 5 to 7 points are considered the presence of moderate depression, and >7 are considered severe depression. The GDS-15 has a sensitivity of 92% and a specificity of 81% in detecting major depression (Borbón-Castro et al., 2020).

Well-being: The "Short Warwick Edinburgh Mental Wellbeing Scale" (WEMWBS) is a scale that measures feelings and thoughts over the past two weeks. It is a valid and standardized scale to assess the well-being of older adults (Anwar & Masood, 2022). The participants' responses were rated as 'low' well-being when the total score was 14-20, 'moderate' scores between 21-27, and 'high' for scores greater than 27

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Statistical Analysis

The data were analyzed using version 23.0 of IBM SPSS. Missing values were managed, and only questionnaires that were filled were included in the study. The Shapiro-Wilk test is used to check for data normality. All categorical variables were expressed as frequencies (percentages) and compared using Pearson's Chi-square test. Age, a continuous variable, was expressed as mean ± standard deviation. Intergroup comparisons were performed using a one-way ANOVA test. A significant value with a two-tailed $P < 0.05$ was considered in cross-tabulation analysis. The Chi-Square test was applied to assess the association between demographic variables and outcome variables, such as active aging scores, subjective well-being, and depression.

RESULTS

The mean age of the study sample was 67.5 (±11.74) years. Gender distribution was almost equal, with 50.4% of participants being female. The majority of participants, 57%, were aged 66–70 years. In the study, 76.5% of the participants spouse were alived. 79.6% of the participants were living with other families, and the remaining 20.4% were living alone or with spouses. Among the participants, only 18% reported having no disease, while 63% had at least one chronic disease, 18.5% had morethan two chronic conditions reported in this study. Among the participants, 24.8% were dependent on family member for financial management, while 25.2% were on pensions. The satisfaction level with the healthcare services was not satisfactory, as a higher number (62% of participants) expressed dissatisfaction.The literacy level was very low as 44% were illetrate, and only 1% were graduate(See Table.1)

Variable	Frequency	Percentages	Variables	Frequency	Percentages
Gender			**Ethnicity**		
Male	109	41.60%	Pathan	142	**62%**
Female	116	**59.40%**	Sindhi	41	18%
Age			Panjabi	22	9%
60yrs to 65yrs	54	23.50%	Chitrali	9	4%
66yrs to 70yrs	131	**57.00%**	Others	16	7%
71yrs to 75yrs	32	13.90%	**Satisfection from residence**		
76 and above	13	5.70%	Totally not satisfy	25	10%
Marital Status			Some how not satisfy	23	10%
Married	176	76.50%	somehow satisfy	91	**39%**
Widowed	54	23.50%	Satisfy	49	21%
Living Status			Very satisfy	91	17%
Alone	47	20.40%	**Satisfection from health care services**		
with other family	183	79.60%	yes	88	38%
Source of Income			No	142	**62%**
Pension	45	19.60%	**Relegion**		
Business	40	17.3%	Muslim	209	**92%**
Other	58	25.20%	Others	21	8%
Dependent	87	**70%**	Illetrate	102	44%
Chronic diseases			Primary schooing	50	22%

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One disease	144	**63%**	Secondary	70	33%
>2 Diseases	43	18.5%	High secondary	6	2.6%
Nil	43	18.5%	Graduation	2	1%

Table 1: Demographic Characteristics of Participants

Table.1 shows the sttaus of all demographic variables of the study participants.
Note: Those values which need to be focused are highlighted with bold.

Level of Active aging, subjective wellbieng, and depression level among study participants:
Table.2 shows that almost half (47%) participants reported low level of active aging, 36% were having moderate level of active aging and only 17% reported high level of active aging. The majority(53%) reported poor wellbieng staus and only 13% of the study participants reported high level of wellbeing in this study. Moreover, the prevalence of depression was high among this population as 36 % reported mild to moderate depression scores reported 5- 7 scores in the geriatric depression scale, less than half 47% were not fallen into depression category in this study however, 17 % were rated sever depression were referred on the spot to psychologist.
Table.2 level of current active aging , subjective wellbieng, and mental health status ,N=230

Outcome variables	Participants rated	Frequency	Percent
Active aging levels	low level of active aging	108	**47%**
	Moderate level of active aging	82	36%
	High level of active aging	40	17%
wellbeing	poor wellbeing (14-29	122	**53%**
	moderate wellbieng(30-55	77	33%
	high wellbieng(>56	31	13%
Depression	Depression mild to moderate	82	**36%**
	sever depression	40	17%
	No depression	108	47%
self rating health status	Poor health	125	**54%**
	neither good nor bed	32	14%
	Good health status	49	21%
	very good health status	26	11%

All bold values in Table.2 are significant to be considered. All the outcome variables shows in this table.

Correlation Coefficient among active aging, subjective wellbieng, and depression in study participants:
Active aging, subjective wellbieng, and depression status were highly correlated in the significant level of <0,001 in the Table.3. The results indicate strong and statistically significant positive correlations between Active Aging and Wellbeing on (r = .922, P = 0.000), Active Aging and Depression (r = .975, P = 0.000), and Wellbeing and Depression (r = .946, P = 0.000). The findings suggest that as Active Aging increases with no depression, there is a strong positive correlation with both Wellbeing and Depression. Additionally, Wellbeing and Depression also show a strong positive correlation.

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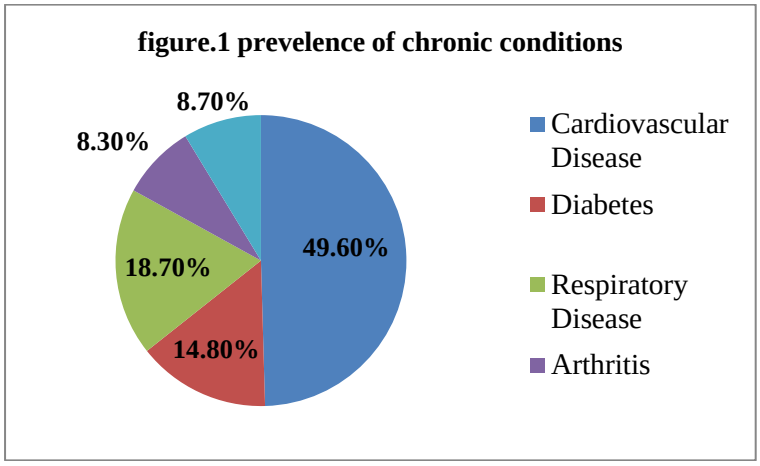
Table.3 Correlation coefficient among active aging, subjective wellbieng, and depression state among participants.N=230

The table.3 displays the correlation coefficients between Active Aging, subjective wellbeing, and Depression. The correlation coefficients are presented in the upper triangle of the matrix, and the associated p-values are presented in parentheses.
The double asterisks (**) denote that the correlations are significant at the 0.01 level.

Almost all (91%) were Muslims, and only 8 % belonged to other religions. The satisfaction level with the health care services was not satisfactory, as a higher number (62% of participants) showed dissatisfaction. The prevalence of hypertension, diabetes, and asthma was 49%, 14%, 18%, and 8%, respectively. Among those with hypertension, most of them had minimal depression (35.5%). (See figure.1)
Figure 1: Distribution of Participants based on chronic health condition



Name of variables	Active Aging	Wellbeing	Depression
Active aging	1	.922**	.975**
	----	0.000	0.000
Subjective wellbeing	.922**	1	.946**
	0.000	----	0,000
depression level	.975**	.946**	1
	0.000	0.000	----

The blue color in the art chart indicating the cardiovascular diseases which show high prevalence among chronic conditions in the study participants.

Self-rating of current health status: The majority (32% of the participants rated their health status as poor, 10 % perceived very poor, and 19% mentioned excellent.(seefigure.2). Self-rating of health status is depend on the individual perception of over all wellbeing.

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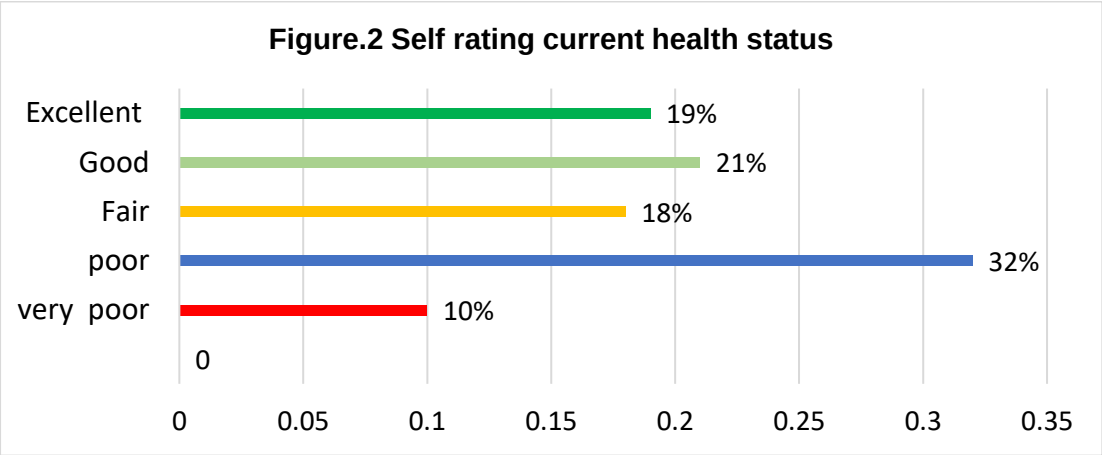
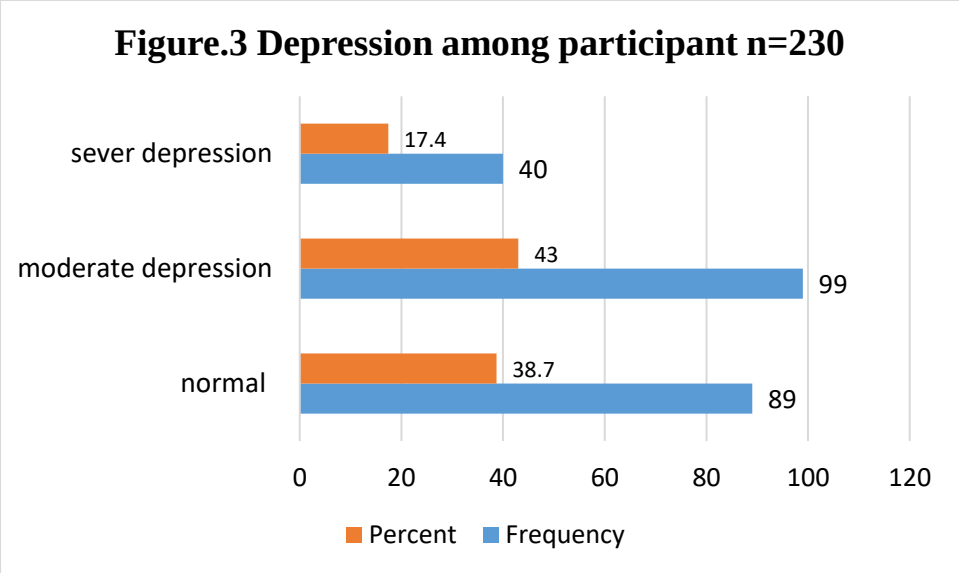


The prevalence of depression was very high among study participants. The study found that the majority of the participants (43%) were living with a moderate level of depression, and only 38% were not depressed. Of the total, 17% were severely depressed but were not clinically diagnosed. The data presented in figure.3.



Non-communicable disease prevalence and the degree of active aging were shown to be strongly correlated (P=0.005). At the time of data collection, those who reported a lower degree of active aging were found to have at least one chronic illness.

The participants in this study had a moderate level (64%) of subjective wellbeing, and only 3% mentioned a high level of well-being, which is an eye-opener for making preventive strategies for maintaining a sense of well-being in their remaining life. (See figure 5).

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Active aging level among study participants: The majority (79%) of the participants in this study reported a medium level of active aging, while only 4.30% classified it as a low level of active aging. This suggests that a small proportion of the older adult population in Pakistan may experience limitations in terms of health, participation, and security, which could potentially impact their overall quality of life. This indicates that a considerable portion of the older adult population in the country can maximize opportunities for health, participation, and security to some extent., See Figure 5.

Figure.5. Active aging level,n=230

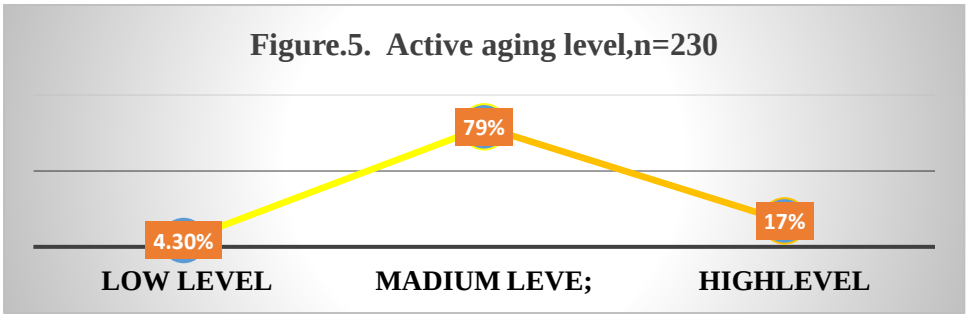

Figure.5 shows that active aging level was maduim in this study with high percentage(79%).
The association between demographic variables and components of active aging was found to be interesting in this study. The level of spirituality and wisdom was high in female participants as compared to male participants (P. < 0.03), and strengthening family ties was associated with the male gender in this study. The retired participants, as well as those aged 60 to 65, reported a high level of healthy lifestyle, economic security, and social participation (p < 0.005). The participants whose spouse was alive reported a high level of healthy lifestyle, and participation in leisure-based activities as compared to widows in this study. (Table 4)

Table 4. Active aging scores in the relationship of demographic variables

Variables	Self-reliance	Learning and integratin g into	Healthy lifestyle	Spiritual wisdom	Social contribut ion	Economi c security	Strengthe n family
Gender							
Male	7.58+ 2.9	10.4+4.6	18.3+ 7.4	15.2+ 7.2	5+ 1.1	5.3+ 1.1	4.7+ 1.5
Female	7.2+ 2.7	11+4.9	18.9+ 6.6	15+ 6.6	5+ 1.9	5.8+ 1.3	4.7+ 1.6
P.value	0.003	0.187	0.52	0.8	0.9	0.04	0.07
Marital status							
Married	7.5±2.8	11.2±4.7	18.2±7	14.9±6.8	5±1.1.9	5.6±1.7	4.7±1.5
Widowed	7.612.5±	10.3±4.7	18.3±5.5	14.7±4.9	4.1±2	4.8±1.8	4.6±1.6
P=value	0.85	0.09	0.9	0.4	0.02	0.005	0.09
Age							
60-65	7.5±2.2	10.8±4.4	19.2±6.2	14.8±6.2	4.6±1.9	5.4±1.6	4.6±1.7
66-70	7.7±4.7	10.7±4.7	18.4±7.2	15.2±6.4	4.6±2	5.6±1.8	4.9±1.4

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71-75	6.8±2.9	11.2±47	15.1±3.8	15.5±6.5	5.2±1.9	5.3±1.8	4±1.6
>76	7.3±2.9	12.6±4.8	19.3±7.3	15.7±7.3	4.8±1.8	4.7±1.5	4.9±1.
P. value	0.45	0.59	0.330.9	0.9	0.5	0.4	0.03
Source of income							
Business	8.6±2	11.2±4.9	18.1±4.4	15.5±3.5	3.3±1.8	5.5±1.8	5.1±1.8
Pension	8.2±2.3	11.3±4.4	18±8	13.1±7	5.3±1.8	5.5±1.7	4.7±1.5
other	7.2±3	10.4±4.4	19.1±7.2	16.9±7	5.5±1.6	5.3±1.7	4.7±1.4
dependent	7.0±3.3	10.3±4.7	17.7±7.3	14.3±7	5.6±1.5	5.4±1.8	4.2±1.5
p-value	0.001	0.69	0.66	0.02	0.00	0.9	0.02

Table.4 presented the mean value and standard deviations(M±SD. The significant lelev is showed by P. value in which <0.005 indicates significanta association among dependent and independent variables. Source of income, gender. Education marital status were corelated with active aging components with P=<0.005).

Association between active aging and demographic variables: The linear regression model showed the predictor's associations with self-reliance scale, learning and integration into society, healthy lifestyle scale, spiritual wisdom scale, economic security scale, social contribution scale, and strengthening family ties scale. The prediction explained variations in self-reliance (R2 = 0.05), learning and integration into society (R2 = 0.72), healthy lifestyle (R2 = 0.77), spiritual wisdom (R2 = 0.81), societal contribution (R2 = 0.82), economic security (R2 = 0.88), and strengthening family ties (R2 = 0.87). The Pearson correlation coefficient test was applied to assess the correlations among study variables. Associations between variables were considered significant (P < 0.005). There is a significant association between gender and learning, integration into society (P = 0.04), and strengthening family ties (p = 0.07). Source of income was correlated with spiritual wisdom (P< 0.001), and economic security (P. < 0.02), and females had a high correlation with the spiritual wisdom (P< 0.02).

Female older adults had lower learning ability (B = 0.184, P = 0.04) and a lack of a healthy lifestyle (B = 15, P < 0.03). Older adults whose spouse was alive had a higher level of healthy lifestyle (B = 0.248, P< 0.021). Additionally, older adults with higher education exhibited a higher level of healthy lifestyle (B = 0.267, P< 0.01). Availing of a pension in old age provided them with more financial security (B = 32, P = 0.04) and strengthened family ties (B = 0.22, P< 0.04) (Table 5).

Table 5. A linear regression model with parameters estimates for the seven components of active aging among older adults. n=23

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Table 5: SR = self-reliance; LIS = integration into society; HLS = healthy lifestyle; SW= spiritual wisdom; SC = social contribution; ES = economic security; SFT = strengthen family ties. B is the beta coefficient, and R squared (R2) measures the goodness of fit of the linear regression model. A positive beta indicates a positive relationship, where the dependent variable tends to increase as the independent variable increases. On the other hand, a negative beta suggests an inverse relationship, where an increase in the independent variable leads to a decrease in the dependent variable.

DISCUSSION

The purpose of this study was to assess levels of active aging, and well-being in older adults. The results of this study provide valuable insights into demographic characteristics, chronic health conditions, depression, and their associations with active aging. The findings contributed to our understanding that active aging and well-being are interconnected in older adults. However, certain factors such as being female, having financial dependency, being over 70 years old, and having non-communicable diseases increase the likelihood of poor well-being in older adults.

In terms of demographic characteristics, the study consisted of a slightly higher percentage of female participants (59.4%) compared to males. The majority (57%) were in the age range of 66–70 years, indicating that the study sample predominantly represented older adults in this age group. This result is

	REF	P. V	REF	P. V	REF	P. V	REF	P. V	REF	P. V	REF	P. V	REF	P. V
Higher - second	-.10(-4.1-1.2)	0.4 1	-.164(-22.1-11.2)	0.05	-..24(-.21-2.8)	**0.021**	-.11(-10.2-27.2)	0.02	-.14(-8.1-9.2)	0.41	-.071(-26.2-12.6)	0.5	-.061 (-20.1-14.2)	0.44
graduation	-236.10(4.1-22.2)	0.002	-.134(-12.1-26.2)	0.05	-.267(-2.81-4.8)	0.062	-.16(-10.2-21.2)	0.15	-.14(-8.1-9.2)	0.41	-.071(-26.2-12.6)	0.5	-.061(-20.1-14.2)	0.44
Higher education	-232.11(5.1-26.2)	0.001	-.124(-9.1-8.2)	0.91	-.267(-2.81-24.8)	**0.012**	-.16(-10.2-21.2)	0.15	-.14(-8.1-9.2)	0.41	-.071(-26.2-12.6)	0.5	-.231(-2.1-2.2)	0.04
Age														
66-70-years	-.36(. -007-.063	0.73	-.21(-.12-22.8)	**0.021**	-64(-.34-21.2)	**0.54**	-.261(-6.1-7.2)	0.05	-4(-.114-12.2)	0.82	-15 (-.14-11.2)	0.72	-032(-.14-11.2)	0.45
71-75 years	-.92(-24.1-2.9)	0.132	-.164(-22.1-11.2)	0.05	-.24(-.21-2.8)	**0.021**	-.11(-10.2-27.2)	0.02	-.14(-8.1-9.2)	0.41	-.071(-26.2-12.6)	0.5	-.061(-20.1-14.2)	0.44
>76 years	-.16(. -003-.013	0.73	-.11(-.9-12.8)	0.53	-64(-.34-21.2)	**0.54**	-13 (-.12-11.2)	0.73	-2(-.214-13.2)	0.52	-12 (-.13-10.2)	0.82	-032(-.14-11.2)	0.65
Source of income														
Pension	-.016(.-007-.063	0.73	-.11(-.10-12.8)	**0.91**	-12(-.14-821.2)	**0.54**	-.161(-6.1-5.2)	0. 5	-4(-.114-12.2)	0.82	.32 (-.14-24.2)	**0.04**	-22(-.14-24.2)	**0.035**
business	-216.10(4.1-24.2)	0.002	-.134(-13.1-22.2)	0.05	-.267(-2.81-2.8)	**06.012**	-.16(-10.2-21.2)	0.15	-.14(-8.1-9.2)	0.51	-.071(-26.2-12.6)	06	-.061(-20.1-14.2)	0.44
other	-.14(-8.1-6.2)	0.5 1	-.154(-21.1-20.2)	0.05	-.144(-.211-3.8)	056	-.18(-20.2-21.2)	0.42	-.14(-8.1-9.2)	0.51	-.071(-26.2-12.6)	0.5	-.061(-20.1-14.2)	0.44

similar to a study conducted by (Ory et al., 2018) in which the majority of the participants were in this age range. The majority (76.5%) reported their spouse was alive, which was associated with participation in leisure-based activities (P <0.002). In terms of ethnicity, the study included a majority (62.0%) of participants from the Pathan ethnic background and 8% from the Punjabi ethnic background. The Pathan ethnic group is present all over the region of Pakistan, including Afghanistan. The majority of participants (79.6%) were living with their families (joining the family system), depicting the prevalent family structure and support system among older adults in Pakistan. The prevalence of cardiovascular diseases was as high as (49.6%) in this study. This result is in coherence with the other

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studies conducted in Taiwan, Thailand, and other regions of Pakistan (Oh et al., 2017), (Rahut et al., 2022; Zainab et al., 2021). In a study conducted by Jalal et al. in Pakistan 90% of older adults reported hypertension (Godil et al., 2017). Due to Pakistan's geographic location, and due to Pakistan's multiculturalism, the prevalence of different diseases is not equally distributed in Pakistan (Jalal & Younis, 2014). Hence, extrinsic factors contribute more to comorbidities among older adults (Agarwal & Brydges, 2018; Khattak et al., 2021). Additionally, the rate of financial dependency was high, which was correlated with poor well-being and a low level of active aging. A study conducted by(Bar-Tur, 2021) in which financial dependency was highly correlated with depression, poor well-being, and disabilities (Zhang Chichen, Cai Yuan, Xue Yaqing, et al., 2020).

In Pakistan, there is a lack of financial security policies. As a result, older adults are primarily dependent on other family members to cover their daily expenses. It is evident from previous studies that experiencing financial insecurity is one of the hidden risk factors for developing mental health problems, disabilities, and a sense of insecurity. The findings are similar to those of another study in which the majority of the participants reported a moderate level of depression (Yinan Y, yingying M, Pengtao D, 2020). These findings highlight the importance of addressing mental health issues in older adults to promote their overall well-being and active aging. Our results contradict other studies conducted in more advanced countries, where the prevalence of depression ranged from 13% to 28% (Cai et al., 2023). The study also explored the association between active aging and various factors. The results showed a significant negative correlation between active aging and chronic health conditions ($P< 0.005$). Specifically, participants with poor active aging had higher rates of cardiovascular diseases, diabetes, respiratory diseases, and arthritis. This suggests that managing chronic health conditions is crucial for promoting active aging among older adults. Furthermore, the study investigated the association between active aging and ethnicity, revealing a significant correlation ($P < 0.040$). These findings highlight the impact of cultural and social factors on active aging and emphasize the importance of customized interventions to meet the unique needs of diverse ethnic groups. In terms of comparing and aligning with other study findings, it is important to note that there is limited research specifically focused on active aging among older adults in Pakistan. Therefore, it is challenging to directly compare these findings with those of other studies. However, the results align with the general understanding that chronic health conditions and mental health play significant roles in influencing active aging and well-being among older adults worldwide.

Strengths and limitations: The strengths and limitations of this research include the assessment of multiple influencing factors and high-risk factors for active aging among older adults in Pakistan. This study can provide a road map for developing an active aging education package by considering the actual needs of older adults. The main limitation of our work was that the cross-sectional design precludes establishing causal relationships between the demographic variables and active aging levels.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study provides valuable insights into the demographic characteristics, associations with chronic health conditions and depression, and the relationship between active aging and various factors among older adults in Pakistan. The findings underscore the importance of addressing chronic health conditions, promoting mental well-being, and considering cultural and social factors in interventions aimed at enhancing active aging and well-being among older adults in the country who are at risk of developing poor well-being.

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Recommendations

By leveraging global best practices and tailoring them to local contexts, policymakers and public health practitioners should promote active aging and improve the quality of life for older adults.

Health care providers, social welfare societies and policy makers requires a collaborative approach involving healthcare providers in the primary health care level, communities, and government agencies to address the multifaceted needs of this demographic group.

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