



## Sleep Quality and its Relationship to General well-being in Ageing Adults

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### Abstract

Ageing, a physiological ontogeny in time, is a life process that witnesses psycho-physiological changes down the line. Alteration in sleep patterns is one of the vital changes which may affect daytime functioning and well-being of the elderly. The aim of this study was to assess the perception of ageing adults on quality of sleep, daytime functioning and general wellbeing and to examine relationship between quality of sleep and general wellbeing. The Pittsburgh Sleep Quality Index (PSQI) and General Well-Being Scale (GWBS) were used to assess quality of sleep and well-being of 120 ageing adults residing in Jaipur city belonging to age group of 60–70 years. Sample was randomly selected. The sleep quality (PSQI) and General wellbeing were measured and analyzed across gender. The results were expressed in terms of mean and S.D.; *t*-test and Pearson's correlation were applied. Significant gender differences were found in ageing adults on general well-being. Sleep Quality was strongly correlated with GWB when all the subjects were considered together, while in case of male participants the Sleep Quality was moderately associated with GWB.

**Keywords:** Sleep quality, daytime functioning and general well-being.

### Introduction

Population ageing, a functional epidemiological journey in time, is a phenomenon that is influencing the structure of civilization globally, wherein both the young and not-so-young genre are affected<sup>1</sup>. As per the extrapolative census of 2011 that took place in India, the percentage of the elderly population (>60 years) expected to be at 12.4 % as compared to that of 7.4 %, as estimate of the 2001 census<sup>2</sup>. Although ageing is an ongoing ingrained and maturational life process evolving into many physical and psychological changes with time and age, alterations in sleep pattern are one of the major changes that may affect daytime functioning and well-being of the elderly. It is a common misconception that sleep needs decline with age; however research demonstrates that sleep needs remain constant throughout the various stages of development of adulthood<sup>3</sup>.

Ageing leads to developmental evolution in sleep pattern and/or sleep architecture which may contribute to age related sleep changes with inherent implications<sup>4</sup>. Though these changes are to be expected with increasing age, age itself does not result in disturbed sleep. Rather it is the ability to sleep that decreases with age, often as a result of the other factors associated with aging<sup>5</sup>. Almost half of the aged adults complain about sleep problems, including disturbed or "light" sleep, fragmented sleep, repeated and frequent interruption of sleep by long periods of wakefulness, early morning awakenings, difficulty in initiation and maintenance of sleep with undesired daytime sleepiness<sup>6</sup>.

The possible reason of age related sleep change has been postulated to be due to intrinsic lightening of sleep homeostatic processes with age<sup>7</sup>.

Sleep is an essential part of the physiological processes contributing to health and wellness; the consequences of sleep disturbances have been documented essentially on day time functioning and general well-being of individuals<sup>8</sup>. Well-being is associated with positive emotions, recall of more positive episodes and lesser negative incidents, optimism, and lower feelings of anxiety, negativity, and depression<sup>9</sup>. Studies have suggested that good sleep quality is associated with wellbeing<sup>8</sup> and vice versa<sup>9</sup>.

Gender differences on sleep patterns have been reported in sleep surveys, and concluded that women typically have a greater number of subjective sleep complaints than men, but on assessing the sleep quality objectively, women are often found to sleep better than men<sup>10,11</sup>. In most studies, old women consistently report lower wellbeing than old men<sup>12</sup>.

Keeping in mind the implications of sleep and its relevance during the age of introspection and leisure and the paucity of data from the Asian and Indian subcontinent, the present study was undertaken to assess the perception of ageing adults on sleep quality and general wellbeing, with the aim to analyze the results across gender and to examine the association between quality of sleep, daytime functioning and general well being obtained by subjective methods of sleep measurements.

## Methodology

The present study was conducted on the elderly residing in the residential societies of Jaipur, Rajasthan, India. The sample population for the study included 120 ageing adults (60 males and their 60 female spouses) in the age range of 60 – 75 years. Sample collection was done using ‘simple random sampling without replacement (SRSWOR)’. The city is divided into four distinct zones: North East, Central; North, North West; South East; South West, based on the geographical location and similar market dynamics by JDA. Five residential societies from each four zones of the resident population were randomly selected. From each of these total 20 societies 10 subjects in the age range of 60 - 75 years were selected by using snowball technique and a total sample size of 200 was obtained. Out of the sample of 200 subjects, 120 subjects belonging to MIG were selected with the help of standardized SESS tool and background profile. Subjects suffering from any acute and/or chronic degenerative illness were excluded from the study. An informed written consent was obtained from the participants at the start of the study. Home visits were made for the purpose of data collection. Personal narratives of the subjects were also recorded / noted for qualitative purpose and the data collection was completed in 6 months time.

Pittsburgh Sleep Quality Index (PSQI) was used to evaluate the sleep quality of the sample population<sup>13,14</sup>. The PSQI is a well-validated, widely used 19-item self-report measure of sleep quality. It contains seven subscales measuring domains such as subjective sleep quality, sleep latency, sleep duration, sleep disturbance, and daytime functioning which combine to yield a global composite score of sleep quality and quantity over the past month, along with its effects on day time functioning. Global sleep quality scores are continuous (range 0 - 21) with high scores of 21 underscoring worse sleep quality and scores of  $\leq 5$  are associated with good sleep quality and scores of more than 5 are associated with poor sleep quality. The PSQI has been demonstrated to have high internal consistency (Cronbach’s alpha = 0.83), test–retest reliability (0.85–0.87) and convergent validity<sup>14,13</sup>.

Subjects were tested on their perceived well- being by using a self - administered questionnaire, the General Well-Being Scale (GWBS), developed for the U.S. Health and Nutrition Examination Survey (HANES I)<sup>15</sup>. The GWBS addresses how individuals feel about their “inner personal state,” exploring both positive and negative feelings and covering six dimensions: anxiety, depression, positive well-being, self - control, vitality, and general health<sup>16</sup>. The GWBS total score ranges from 0 to 110. A score above 72 indicates positive well-being, while a score below 72 represents stress. Those who scored below 60 were considered to have severe stress. With outstanding reliability and validity, the GWBS was reported to be a useful indicator of subjective well-being in the general population<sup>17</sup>. The data so compiled was subjected to appropriate statistical analysis.

## Results and Discussion

Mean and standard deviation (SD) were computed for the scores obtained on the measures of PSQI and General well-being. The independent samplest-test was applied to compare the scores across gender. Pearson’s correlational analysis was carried out to assess an association between score son PSQI and General Well-being Scale.

### Sleep Quality (PSQI) and General Wellbeing of Male and Female Elderly

**Table-1**  
**Comparison of PSQI and General Well-being Score across Gender**

	Gender	N	Mean	S.D.	T-value
PSQI	Male	60	8.72	3.98	0.88
	Female	60	9.35	3.78	
General Well-being Score	Male	60	78.53	12.24	3.72*
	Female	60	69.13	15.24	

\*Significant at 0.0003 level

The mean scores and SD’s of both male and female subjects of the sample population on the measures of PSQI and GWB and ‘t’ values have been depicted in Table-1. Mean PSQI scores obtained are 8.53 and 9.23 for male and female elderly respectively, indicating poor sleep quality in both the groups. Findings are consistent with previous studies which also document poor sleep quality in the aged adults as compared to that observed in their young counterparts<sup>18</sup>. A recent meta-analysis of about 9,000 aged adults in the age range of 65 years plus have also reported that 42 per cent of the participants of the study had observed difficulty in initiating and maintaining sleep<sup>19</sup>.

Studies in the past have indicated that in addition to age related sleep changes<sup>5</sup>, other conditions are also significant which accompany ageing and results in poor sleep in elderly like medical co-morbid conditions<sup>20</sup> and psychiatric problems<sup>21</sup>.

In the present study women registered a high PSQI score indicating poor sleep quality. Previous studies evaluating sleep objectively have however reported that women took less time to fall asleep, slept longer, and slept for a greater proportion of the night. Older women are at particular risk for sleep difficulties<sup>19</sup>. However, the difference on PSQI scores among male and female in the present study was not statistically significant. An interesting finding that could be appreciated in the present study was the low sleep quality despite long sleep duration in women as compared to that observed in the male subjects. Few studies have also noted the greater prevalence of poor sleep quality among women as compared to that found in men, but have included social factors as possible explanation for this.

The mean GWB scores obtained for male and female elderly are 79.86 and 70.13 respectively, indicating low positive well -

being among male elderly and marginal stress problem in female elderly. The difference between the groups was statistically significant on the measure of GWB ( $p < 0.05$ ). The results draw our attention towards the heterogeneity of the sample population. Ageing female participants have shown lower GWB than that of male participants. The findings are consistent with that of the previous studies showing overall low well-being in women as compared to that observed in men in general<sup>25</sup>. This gender difference is also observed in the aging population of both women and men<sup>12</sup>, a feature that could be explained by unequal distribution of opportunity structures and action resources between genders in many societies<sup>26,25</sup>. Further studies need to be designed to explore the factors responsible for wellbeing and gender discrepancy.

**Relationship between GWB and Sleep quality among Male and Female Elderly**

**Table-2**  
**Correlation between General Well-being score and PSQI and its domain of Day-time functioning**

	Gender	PSQI	Daytime Functioning
General Well-being Score	Male	0.47*	0.39*
	Female	0.74**	0.32
	Total	0.61**	0.32*

\*Significant at 0.05 level, \*\*Significant at 0.01level

Table-2 represents the values of correlation between scores of GWB and PSQI and its domain of Day-time functioning for both male and female and for total group swell. The findings reveal a significant association of GWB with PSQI ( $r = 0.57$ ,  $p < 0.0001$ ). In the current study even when the two groups were considered separately, similar findings were obtained for male and female elderly, underscoring the relevant association so observed between GWB and PSQI.

Correlational analysis revealed that when all the subjects were considered together, GWB was strongly correlated with PSQI. However, when the two groups were considered separately, the observations revealed that GWB was moderately associated with PSQI in male subjects so recruited in the present study. Results also revealed a significant association between GWB and domain of daytime functioning ( $r = 0.31$ ,  $p < 0.05$ ) for the group, and when both male and female elderly were considered separately, association was significant for male elderly ( $r = 0.38$ ,  $p < 0.05$ ), though the association between GWB and daytime functioning was not statistically significant in the ageing female subjects.

In the present study, an association between GWB and sleep quality both in male and female participants could be appreciated, an observation consistent with previous studies that have also highlighted the fact that sleep quality is an indicator of well-being. As has been supplanted by the present and past studies wherein an association between GWB and Sleep Quality has been elucidated, studies need to be designed to explore the

various causal factor(s) responsible for this association. Wellbeing is associated with development and upholding of positive feelings and lack of the negative feelings. It is possible by recall of more positive events and fewer negative events, hopefulness, and lower levels of pessimism and despair. Due stress need to be laid to enhance positivity. Studies support the fact that positive psychology interventions improve wellbeing of an individual in general.

Poor sleep quality may have significant effects on daytime functioning and individual performance, which in turn affects the wellbeing of an individual. Individual differences in sensitivity to the effects of poor sleep quality on performance have been documented, wherein the daytime functioning in some individuals with poor sleep quality is severely affected while others show minimal effects<sup>29</sup>. So, in addition to good sleep quality being predictor of positive wellbeing, people who have positive attitude towards life and recall positive experiences have an easier time falling asleep at night, than people who are pessimistic and think over and brood over negative events that have occurred<sup>30</sup>.

**Conclusion**

Among several changes that occur with ageing, changes in sleep quality and quantity can be the most difficult for many older adults. Strategies need to be shaped in such a way so as to promote measures to improve sleep quality and to incorporate positive psychology interventions for enhancing and maintaining well-being of ageing population, a quintessential feature of healthy ageing. The findings of this study may have limited generalization due to the small sample size. Further studies involving large sample of aged are necessary to establish the findings of present study.

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