



GRATITUDE AND SLEEP QUALITY AMONG YOUNG AND MIDDLE ADULTS: A COMPARATIVE STUDY

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Abstract

Previous researches have shown that appreciation predicted higher subjective sleep quality, lower daytime dysfunction, and shorter sleep latency. Pleasant and unpleasant cognitions before one's sleep mediated the relationship between gratitude and sleep quality. However, there remains a lack of understanding about how thankfulness affects people throughout their lives and how different age groups differ in terms of gratitude and sleep quality. The study attempted to close the gap by comparing gratitude and sleep quality in young and middle-aged adults. A cross-sectional design was used with a sample size of 120 participants, including 60 young adults and 60 middle-aged

individuals. The Sleep Quality Scale and the Gratitude Questionnaire (GQ-6) were used to assess sleep quality and gratitude among individuals respectively. For statistical analysis, Pearson correlation was performed to determine the correlation between the measures (gratitude and sleep quality) among young and middle-aged individuals, and a two-tailed T-test was employed to identify significant differences between the two groups for both measures. The findings indicated that there were significant differences between sleep quality among young adults ($M=33.98$, $SD=10.13$, $n=60$) and middle adults ($M=29.77$, $SD=8.63$, $n=60$); $t(118)=-2.45$, $p=0.02$ (two-tailed test); however, no significant difference was found between gratitude among young adults ($M=30.93$, $SD=6.22$, $n=60$) and middle adults ($M=30.68$, $SD=5.89$, $n=60$); $t(118)=-0.23$, $p=0.82$ (two-tailed) and correlation studies showed a moderate positive correlation among both young adults ($r=0.54$) and middle adults ($r=0.61$) at 0.05 level of significance ($p<0.05$). Overall, the findings suggested that sleep quality differed across lifespan and gratitude was mediated by subjective's experiences, spiritual virtues and life skills.

Keywords: Gratitude, Sleep Quality, Lifespan, Middle Adults, young Adults

INTRODUCTION

The American Psychological Association (2020) defined gratitude “as a feeling of delight and thankfulness in reaction to favourable events or tangible gifts. It is understood as both a characteristic and a state”. In its state form, gratitude manifests as individual moments of appreciation for great results, whereas trait thankfulness shows a larger inclination to view and appreciate the world positively.

Research indicates that gratitude is associated with various positive outcomes, including its predictive role in subjective sleep quality and duration. Studies have shown that individuals with higher levels of gratitude tend to experience better sleep quality, shorter sleep latency, and reduced daytime dysfunction. Pleasant and unpleasant cognitions before one's sleep have shown to mediate the relationship between gratitude and sleep quality (Wood, 2009). Another study revealed a positive association between GRAT scores (scale to measure gratitude) and daytime energy and greater hours of sleep during night (Alkozei, 2019). In research by Altier et al., (2020) it was shown how gratitude helped to mediate perceived burdensome among participants which further buffered sleep disturbances.

However, there remains a gap in understanding how gratitude's impact varies across the lifespan and how different age groups diverge concerning gratitude and sleep quality. To address this gap, research would explore the relationship between gratitude and sleep quality, specifically examining the differences between young and middle adults. This investigation aimed to shed light on the nuanced dynamics of gratitude and sleep quality across different stages of adulthood.

Gratitude and Neural Mechanisms

Research findings suggested that engaging in gratitude tasks leads to significant reductions in amygdala reactivity, contributing to a cascade of positive effects. Notably, this reduction is associated with the heightened production of pro-inflammatory cytokines, $\text{TNF-}\alpha$ and IL-6 (Laura et al., 2017). Moreover, participants exposed to gratitude interventions exhibited increased respiration rates and systolic blood pressure during trust-related decision-making, indicating elevated motivational intensity (Hazlett et al., 2021). Neurological studies have shown that right

anterior temporal cortex has been linked to feelings of thankfulness and has also been associated with one's tendency to engage in moral judgements (Zahn et al., 2009). Higher percentage of gray matter volume has been found to be stimulated in expression and experience of gratitude. Neurotransmitters like dopamine and serotonin further influence our emotions and have been further linked to gratitude.

Gratitude Across Lifespan

Studies on gratitude across different age groups presents varying perspectives. For instance, a study observed that older individuals exhibited higher levels of gratitude, followed by middle-aged and young adults (Chopik et al., 2019) while another study found no age disparities in gratitude when utilizing a character strengths-based measure, although differences were noted in other character strengths among Swiss adults (Ruch, 2014).

Despite inconsistencies, theories of aging and adult development propose a potential link between age and gratitude due to its association with maintaining social relationships. Socioemotional Selectivity Theory suggests that as people age, awareness of limited time may influence gratitude levels. In middle adults, a negative association was identified between trait gratitude and loneliness in individuals above age 40.

Individual differences also play a crucial role, for example, a study by Allemand et al. (2019) highlighted that an individual's perception of future opportunities correlated with their level of gratitude, it was further suggested that expressing gratitude was more likely to happen in practical situations rather than personal interpersonal relations.

Sleep Quality

Sleep quality refers to satisfaction regarding one's sleeping patterns. Satisfaction towards one's sleep can be measured by four attributes, which are: how effectively one sleeps, time taken to fall asleep, number of hours one sleeps and how often one wakes up during his/her sleep cycle. Physiological dimensions like chronological age, biological cycle, REM Sleep; psychological dimensions like mental health and stress and finally environmental factors like temperature, noise and technology use can be used as indicators to measure one's level of sleep.

Sleep Quality across Lifespan

As people age, their sleep patterns and circadian rhythms typically undergo changes. These age-related alterations include shifting sleep schedules to an earlier time, shorter periods of night-time sleep, more frequent napping during the day, increased interruptions in sleep at night, reduced deep sleep (slow wave sleep), and changes in the body's natural sleep-wake cycle and sleep-regulating hormones. Most of these changes are observed between young and middle adulthood. However, the sleep parameters of healthy older adults often remain relatively stable.

Research by Vitiello (2018) suggested that the circadian system and sleep regulation mechanisms become less robust with age, contributing to these sleep changes. Additionally, sleep-related hormone secretion patterns also shift with normal aging. A study by Lemola et al. (2015) further found that self-reported sleep quality declined steadily from young adulthood until around age 60. Interestingly, a temporary improvement in sleep quality was found around retirement age, but it then declined again after age 66. In contrast, Paulson (2019) reported no significant differences in subjective sleep quality between middle-aged and older adults. Given these varying

findings, further studies are needed to better understand sleep quality across different age groups. It's also essential to explore the influence of psychological factors, such as well-being, gratitude, happiness, and stress, on sleep quality in various age brackets.

Gratitude and Sleep Quality

Limited research explored the direct link between gratitude and sleep issues. A recent systematic review by Ong et al. (2017) highlighted how gratitude was associated with improved sleep quality, within this review, a community-based study involving 401 participants revealed that gratitude correlated with better sleep outcomes, such as shorter time to fall asleep, longer sleep duration, enhanced sleep quality, and reduced daytime dysfunction. These positive effects were attributed to improved pre-sleep thoughts (Wood et al., 2009). Another study involving undergraduates found that a gratitude-focused intervention led to decreased pre-sleep anxiety and sleep disruptions (Digdon & Koble, 2011).

The findings by Wood et al. (2009) suggested that individuals with a grateful disposition have positive thoughts before bedtime, focusing on positive social interactions and life evaluations rather than negative events or circumstances. This positive mindset may reduce pre-sleep anxiety and cognitive arousal, promoting better sleep quality. Gratitude's positive impact on social interactions may also help alleviate sleep problems. For instance, a study involving 118 adults found that gratitude was linked to fewer physical health issues, including sleep disturbances, with loneliness playing a mediating role (O'Connell et al., 2016). Similarly, research on adolescents indicated that gratitude was associated with reduced physical symptoms, such as headaches and muscle soreness, through enhanced relational satisfaction and support (Froh et al., 2009).

Additionally, a longitudinal study on acute care nurses revealed that those who received more expressions of gratitude felt more satisfied with their work, which subsequently improved their sleep quality and adequacy (Starkey et al., 2019).

Review of Literature

Powell (2022) observed that practicing gratitude helped to maintain autonomic nervous systems, including sympathetic and parasympathetic nervous systems, stress reduction and overall health. The author further revealed gratitude was associated with improved sleep and reduced symptoms of stress, such as headaches, sleeplessness, and digestive issues.

Boggiss et al. (2020) evaluated the impact of gratitude on physical health and health-related behaviors. Review from 19 studies were done to evaluate the result. Findings showed gratitude interventions helped to improve quality of sleep but other health-related factors required more research in future.

Altier et al. (2020) aimed to explore the moderating role of gratitude on sleep disturbances. Results showed that gratitude helped to mediate perceived burdensome among participants which further buffered sleep disturbances.

Alkozei et al. (2019) aimed to explore the link between gratitude and sleep quality where depressive symptoms acted as a mediator. Results showed gratitude was positively associated with greater energy throughout the day and greater hours of sleep during nighttime, which was further mediated by depressive symptoms.

Naito et al. (2019) aimed to examine gratitude among different age groups conducted between 1900 to 2018. Results showed quantitative and quantitative changes across different stages of life and emphasized the importance of considering factors like thinking abilities, social interactions, and tasks.

Chopik et al. (2019) aimed to evaluate gratitude across lifespan by establishing a link with subjective well-being. Results found that the gratitude was shown by old age people the most, followed by middle and young adults. It was further found that link with subjective well remained constant throughout all age groups.

Paulson et al. (2019) compared sleep quality of middle and old adults. Middle adults ranged from 40-65 while older adults were above age 65. Pittsburgh Sleep Quality Index was used to assess sleep quality among participants. Results revealed no subjective differences in sleep quality among both the groups.

Allemand et al. (2018) aimed to measure gratitude from early adulthood to old adulthood. Results indicated that perception of one's available opportunities and time indicated the level of gratitude shown by an individual. Researches further concluded that Expressing gratitude is more likely to happen in practical situations rather than in personal interactions.

Mei-Yee Ng et al. (2017) examined how sleep mediated the relationship between gratitude and measures like depression and anxiety among patients having chronic pain. Results showed that sleep moderately mediated the relationship between gratitude and depression whereas strongly mediated gratitude and anxiety further inferring that sleep mediated gratitude's relationship with mental health correlates.

Madrid-Valero et al. (2017) aimed to study gender and age-related effects on sleep quality. 2,144 participants aged between 43 and 71 years belonging to the Spain Twin Registry were chosen for the study. Results revealed that age played a significant role in sleep quality, meaning sleep quality deteriorated with age, this was prevalent more among women.

Lemola et al. (2015) compared sleep quality among different age groups. Results revealed Subjective sleep quality declined linearly from young adulthood until age 60, then experienced a transient increase around retirement, but decreased again after age 66.

Methodology

Aim

To compare gratitude and sleep quality among young and middle adults.

Research Objectives

- To study the relationship between gratitude and sleep quality among young adults.
- To study the relationship between gratitude and sleep quality among middle adults.
- To compare gratitude among young and middle adults.
- To compare sleep quality among young and middle adults.

Hypothesis

- There will be significant relationship between gratitude and sleep quality among young adults.
- There will be significant relationship between gratitude and sleep quality among middle adults.

- There will be significant difference between gratitude of young and middle adults.
- There will be significant difference between sleep quality of young and middle adults.

Variables

Independent Variables

- Age Group (Young Adults vs. Middle Adults)
- Gratitude Levels (measured using Gratitude questionnaire -GQ-6)

Dependent Variables

Sleep Quality (measured using Sleep quality Scale)

Control Variables

- Gender
- Socioeconomic status

Sampling Design

A sample of 120 participants within the age range of 18-50 was used for the study. The sample consisted of 60 participants from age group 18-35(young adults) and 60 participants from age group 36-50(middle adults). A stratified random sampling was employed to collect samples.

Sample A

Samples for age group 18-35 were recruited from Amity University Noida from diverse education departments. Online Responses were collected using Google forms and offline

responses were collected in university using psychometric tools Gratitude questionnaire (GQ-6) and Sleep Quality Scale.

Sample B

Responses for the age group 36-50 were collected from multiple sources like workplace settings, online platforms and community centers. Responses were collected using psychometric tools- Gratitude questionnaire (GQ-6) and Sleep quality scale.

Inclusion and Exclusion criteria

Inclusion criteria involved young adults (age range:18-35) and middle adults (age range:36-50) while exclusion criteria involved individuals with chronic health conditions affecting sleep and individuals of others age groups, who were below age 18 or above age 50.

Research Design

Cross- sectional design was used to collect data on middle and young adults. Quantitative research method was employed for the study to analyze the data where survey method was used to collect responses from the participants using psychometric tools Gratitude Questionnaire (GQ-6) and Sleep Quality Scale.

Tools

- **Gratitude Questionnaire-Six-Item Form (GQ-6)**

McCullough et al. (2002) used a six-item self-report questionnaire to examine people's levels of thankfulness in their daily lives. Participants rate six statements on a seven-point Likert scale, with one indicating strong disagreement and seven indicating strong agreement. The alpha

ranges from .82 to .87 showing a good internal reliability. Positive correlates include optimism, spirituality and religiousness, life satisfaction, empathy, and prosocial behaviour, while depression, anxiety, envy and materialism were negative correlates.

- **Sleep Quality Scale**

The Sleep Quality Scale was used to assess sleep quality with 28 items using following dimensions of sleep quality: daytime symptoms, problems initiating sleep, trouble waking and maintaining sleep, restoration after sleep and sleep satisfaction. Yi and colleagues discovered an internal consistency of 0.92 and a test-retest reliability of 0.81. The Pittsburgh Sleep Quality Index values show a high correlation with the SQS. Respondents use a four-point Likert scale to indicate how frequently they display specific sleep behaviours from “rarely” to “almost always.” Total scores range from 0 to 84, with higher values indicating more acute sleep disorders.

Results

To study the age differences between sleep quality and gratitude, T-test was used while Pearson product moment of correlation was applied to analyze the relationship among the measures (gratitude and sleep quality).

Table 1 represents comparison of young and middle adults on the measures of gratitude and sleep quality. Results showed a significant difference between sleep quality among young adults ($M=33.98$, $SD=10.13$, $n=60$) and middle adults ($M=29.77$, $SD=8.63$, $n=60$); $t(118) = -2.45$, $p=0.02$ (two-tailed test), on the other hand no significant difference was found between gratitude

among young adults ($M=30.93$, $SD=6.22$, $n=60$) and middle adults ($M=30.68$, $SD=5.89$, $n=60$); $t(118) = -0.23$, $p=0.82$ (two-tailed).

Table 1

Age differences on the measures of Gratitude and sleep quality. ($df=118$)

Measures	Groups	Mean	SD	SeM	T-value
Gratitude	Young adults	30.93	6.22	0.8	-0.23
	Middle adults	30.68	5.89	0.76	
Sleep quality	Young adults	33.98	10.13	1.31	-2.45
	Middle adults	29.77	8.63	1.11	

Table 2 presents the summary results of coefficients of correlation between gratitude and sleep quality among young and middle adults. Gratitude and Sleep quality positively correlated with each other among both young adults ($r = 0.54$) and middle adults ($r=0.61$) at 0.05 level of significance ($p<0.05$). The coefficient of correlations showed a moderate relationship between gratitude and sleep quality among both the groups.

Table 2*Correlation between gratitude and sleep quality among young and middle adults*

Groups	Variables	N	r	Sig
Young Adults	Gratitude	60	0.54	$P < 0.05$
	Sleep quality			
Middle Adults	Gratitude	60	0.61	$P < 0.05$
	Sleep quality			

Discussion

The aim of the study was to investigate age differences among young and middle adults on gratitude and sleep quality. Previous research has shown that appreciation predicted higher subjective sleep quality, lower daytime dysfunction, and shorter sleep latency. Pleasant and unpleasant cognitions before one's sleep have shown to mediate the relationship between gratitude and sleep quality. However, there is still a lack of understanding about how thankfulness affect people throughout their lives and how different age groups differ in terms of gratitude and sleep quality. The study attempted to close the gap by comparing gratitude and sleep quality in young and middle-aged adults. A cross-sectional design was used with a sample size of 120 people, including 60 young adults and 60 middle-aged individuals. The Sleep Quality Scale and the Gratitude Questionnaire (GQ-6) were used to assess sleep quality and gratitude among individuals.

Correlation between Gratitude and Sleep Quality

Findings showed a positive correlation between gratitude and sleep quality among young adults ($r=0.54$ at $p<0.05$) and middle adults ($r=0.61$ at $p<0.05$). Our findings coincided with the previous research findings but the correlation was found to be moderate. The findings can be explained by Gratitude's tendency to harbour positive thoughts before bedtime, focusing on positive social interactions and life evaluations rather than negative events or circumstances. This positive mindset may reduce pre-sleep anxiety and cognitive arousal, promoting better sleep quality. Gratitude's positive impact on social interactions may also help alleviate sleep problems. For instance, a study involving 118 adults found that gratitude was linked to fewer physical health issues, including sleep disturbances, with loneliness playing a mediating role (O'Connell, O'Shea, & Gallagher, 2016). Similarly, research on adolescents indicated that gratitude was associated with reduced physical symptoms, such as headaches and muscle soreness, through enhanced relational satisfaction and support (Froh et al., 2009).

Age Differences on Gratitude and Sleep Quality

Findings have revealed a significance difference between sleep quality of young and middle adults with $t(118) = -2.45$, $p=0.02$ (two-tailed test), while gratitude showed no significant differences between young and middle adults with $t(118) = -0.23$, $p=0.82$ (two-tailed). Previous studies have also shown significant differences between sleep quality among young and middle adults, but the results regarding the direction of relationship had been inconsistent. For example, a study showed elder population showed consistent sleep and waking patterns in comparison with young adults (Kramer, 2017) while another study revealed Subjective sleep quality declined linearly from young adulthood until age 60, then experienced a transient increase around

retirement, but decreased again after age 66 (Lemola, 2015). Differences in sleep quality has been found in terms of periodic leg movement index (Silvic, 2008), earlier habitual bedtime and wake time, more disturbed sleep, and a tendency for an earlier minimum of the circadian temperature rhythm (Carrier, 2001); shown by Polysomnographic sleep data. Insignificant differences in gratitude can be explained by future predictions about one's life in terms of remaining opportunities rather than chronological age (Alleman & Hill, 2019). This postulates that differences in gratitude levels are not pertained to demographic differences rather it is mediated by one's perception about life and personality. A study Morgan and Guillford (2017) showed that gratitude can be developed over time and was viewed as a spiritual virtue, this further implies that virtues and skills attached may/may not be learned in adulthood as well.

Limitations of the Study

Cross-sectional design was used or the study to collect data among young and middle adults, this further implicates that design cannot establish causality between gratitude, sleep quality, and age, and it cannot account for changes over time within individuals, therefore a longitudinal study can be applied in future for better analysis. The measures used for the Sleep Quality Scale and Gratitude questionnaire relied on self-report measures which are further subjected to biases and social desirability. The study failed to control confounding variables like physical health, medication use or psychological disorders that could influence both gratitude and sleep quality, using mediators could help to establish better causal relationship. Moreover, there are very few researches that study a direct relationship between gratitude and sleep quality, most of the researchers have used mediating variables to study the relationship between gratitude and sleep quality. Therefore, more researches will be needed to study on direct relationship between

gratitude and sleep quality. And finally, study didn't explore the direction of the difference between sleep quality among young and middle adults which can be explored in future researches.

Conclusion

The findings indicated that there were significant differences between sleep quality among young adults ($M=33.98$, $SD=10.13$, $n=60$) and middle adults ($M=29.77$, $SD=8.63$, $n=60$); $t(118) = -2.45$, $p=0.02$ (two-tailed test), on the other hand no significant difference was found between gratitude among young adults ($M=30.93$, $SD=6.22$, $n=60$) and middle adults ($M=30.68$, $SD=5.89$, $n=60$); $t(118) = -0.23$, $p=0.82$ (two-tailed) and correlation studies showed a moderate positive correlation among both young adults ($r = 0.54$) and middle adults ($r=0.61$) at 0.05 level of significance ($p<0.05$). Our findings coincided with the previous research findings but the correlation was found to be moderate. Although, further research would be required to study direct relationship between gratitude and sleep quality, moreover longitudinal study could be used to study change in individual variables over a period of time.

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