Research Article

The Effect of Smartphones on the Self-Rated Health Levels of the Elderly: A Cross-Sectional Study in Punjab Province

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Abstract:

Background and objective: With ongoing modernization, the use of mobile phones is increasing day by day, but it has deleterious effects on health. The purpose of the study is to know how smartphones are affecting the social lives and mental health of elderly people.

Methodology: This was a cross-sectional study that included the elderly population of Punjab Province. The data was collected through a questionnaire on Google Forms using the snowball sampling technique.

Results: From this study the results deducted were that most people have complained of tiredness and less focus, especially after smartphone usage. These people feel exhausted and disturbed after phone usage, and they are not satisfied with their health. Their social life is also affected by smartphone usage. Such people spend less time with family and at social gatherings.

Conclusion: Smartphone usage is affecting the elderly in social, mental, and physical aspects of life. They feel tired and less focused. The elderly must be educated on how decreasing screen time will increase their mental and physical health.

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INTRODUCTION:

According to the annual report published by Pakistan Telecommunication Authority (PTA), the number of smartphone users exceeded 2G phone users in 2021.[1] The rapid rise in the use of smartphones has influenced the lifestyle of not only adolescents but also the elderly. Smartphones have become an essential source of learning and social connection for the old. However, they also impact the mental health and daily life activities of the elderly.[2] Self-rated health is based upon asking individuals to assess the status of their health usually on a five-point scale.[3] More pragmatic research is required to evaluate the relationship between technology and the physical and mental health of human beings.

A US survey has shown that more than 10 million people use their smartphones to look for health information and facilities.[4] Previous research has revealed that mobile applications designed to monitor exercise, diet, and blood pressure help users improve their health status.[4] Smartphones enable several people to interact with their friends and family and reduce stress in their life. They contain features like text-to-speech, GPS, and social media that enable people to remain integrated into society. A longitudinal study has found that Facebook helps with low self-esteem and increases social media ties.[5] But various studies have shown poor self-rated health and self-satisfaction among adolescents following the repeated use of social media.[6] Recent research revealed that most people would rather attend to their smartphones rather than talk to people in a social gathering.[7] Some scholars might argue that smartphones and social media have increased the sense of loneliness.[8] Similarly, there has been a rampant increase in the bedtime use of smartphones among adolescents and adults. Bedtime use of smartphones has been linked to sleep loss, disturbances in sleep patterns, disturbances in sleep-wake patterns, and decreased physical energy during the day. A population survey conducted in the UK reported that roughly 70% of people with smartphone addiction reported poor sleep quality.[9] A possible mechanism for this phenomenon is decreased melatonin secretion due to exposure to intense light.[10] Injudicious use of smartphones has also been correlated with changes in personality traits like anxiety, depression, and emotional instability among the youth.[9]

Many studies have been carried out to assess the effect of smartphones on the health of adolescents and adults. However, similar in-depth research remains to be conducted satisfactorily among the elderly population. This study aims to discover the possible effects of smartphones on the self-rated health levels of the elderly. The specific objectives of this study include; finding the impact of smartphones on the physical and mental health of the elderly, exploring their effects on the daily life and social activities of the elderly, learning the influence of smartphones on family relationships, and comparing the effects on lifestyle with non-smartphone users among the elderly population.

METHODS AND METHOD:

This cross- sectional study was conducted in the

Punjab province of Pakistan between July to October 2021 using Google Docs as the study setting. The study population included elderly subjects aged 50 years or above who were smartphone users with Android and/or Apple devices and had internet accessibility. The sample size of 139 was calculated using a non-probability snowball sampling technique with an expected prevalence of 10% and a margin of error of 5%. The sample size is calculated using the following equation;

N= (Z^2 P(1-P))/d^2

Z (level of confidence) = 95% or 1.96

P (expected prevalence) = 10% or 0.1

D (margin of error) = 5% or 0.05

N (sample size) = 139

Inclusion criteria for the study included elderly subjects aged 50 years or above who were smartphone users, had internet accessibility and were residents of Punjab province. Exclusion criteria included non-smartphone users, people aged less than 50, people living outside of Punjab province, and elderly individuals with known mental health disorders.

Data was collected through Google Docs questionnaires, and one-way ANOVA with repeated measures was used for statistical analysis with an alpha level of significance accepted when $p<0.05$. The data were analyzed using IBM SPSS Statistics for Windows (Version 28.0. Armonk, NY: IBM Corp.).

The study ensured voluntary participation of all subjects with proper consent portions in the questionnaire, and confidentiality and anonymity of data collected were ensured to avoid potential harm to the participants. Deceptive practices were avoided, and the right to withdraw was provided to the participants.

RESULTS

Google forms of 75 subjects were analyzed in this study with the age of subjects >50. Out of 50, there were 53 males and 22 females. All the subjects were smartphone users, 96% of which were android users and 4% were apple phone users. Table 1 shows the extent of smartphone usage among these subjects. Most of the subjects agree that they are using smartphones actively and it is affecting their daily life. Table 1 also shows the effect of smartphones on the health of the subjects and their quality of life. These are also shown graphically in Fig. 1 and 2. Most of the responses demonstrate that more smartphone usage is affecting the health of the subjects. They feel tired and less focused after using smartphones.

Explanative Variable	**Average Item Score (1-5)**	**Domain Score (13-65)**
The extent of smartphone usage in daily life	3.35	43.65
Effect on the Health of the subjects	3.20	41.57

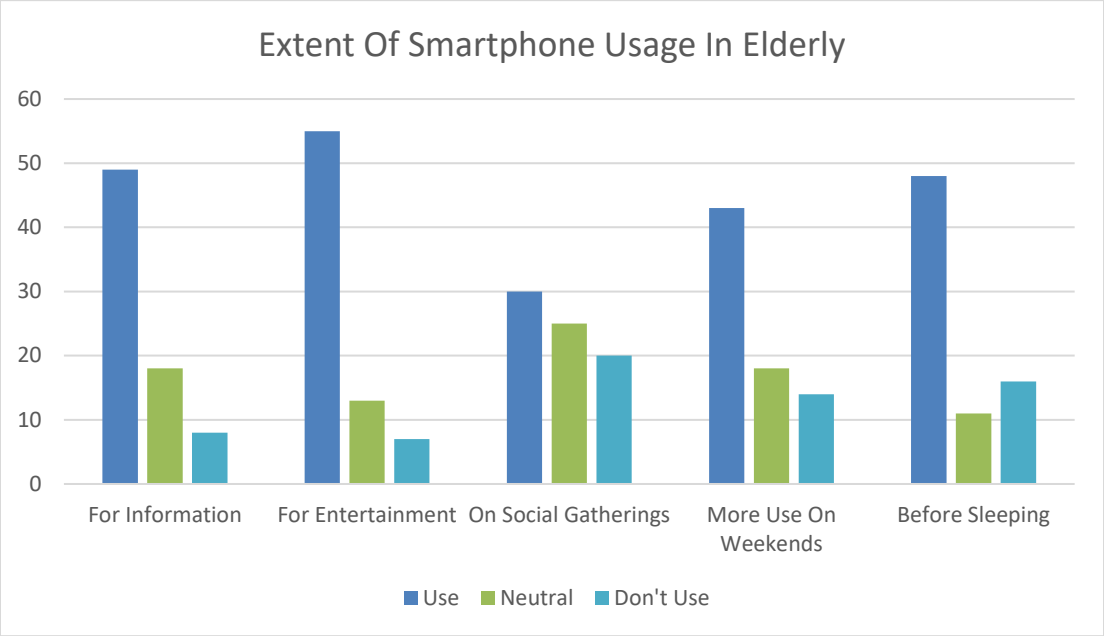

Figure 1 Extent of Smartphone Usage in the Elderly

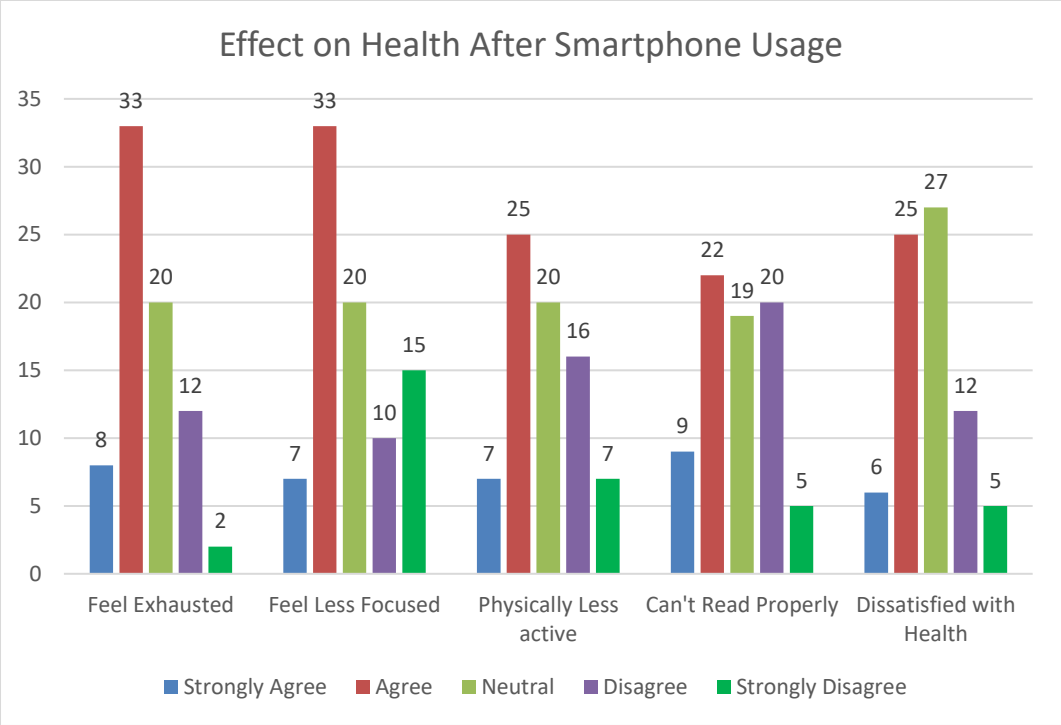

Figure 2 Effect on Health after Smartphone Usage

DISCUSSION:

We investigated various aspects of elderly smartphone use in this study. It has been observed that the majority of people use smartphones to obtain information from electronic media as well as for entertainment. A vast majority of participants agreed that they are active internet users, spend most of their time using it, and enjoy it a lot. The study explored that they also feel some negative effects, like being less focused, less physically active, and having difficulty reading. Because of the increased use of smartphones, people spend less time with their families. It is noted that people are engaged with their phones in social gatherings. The duration of smartphone usage is further prolonged during weekends and at bedtime because they feel relaxed after consuming content from smartphones.

On the other edge, the maximum number of people agreed that they feel tired after using smartphones (n=34,45.3%). The highest percentage of participants agreed that they felt less focused after using smartphones (n=33,44%). The majority of people (n = 25,33%) disagreed that their hands shake after using smartphones at night. When asked if they had difficulty walking upstairs after a long period of screen time, they gave a neutral response (n = 27,36%). 36% of the participants agreed that they felt weakness in their arms after holding their smartphones for more than 2 hours. Obsession with smartphones is also seen, and 38.7% of the participants agreed with this statement. The response given on the satisfaction of their health status after smartphone usage was neutral.

The limitations of this study include that it covers only one region of Pakistan and that the questionnaire responses might be biased as data collection is done through online forms. To mention some implications of this research, taking into account the opinions and responses of the subjects, certain suggestions can be made about using smartphones for mass education and awareness. People can be advised on how to enjoy this invention wisely while not jeopardizing their health. By reducing screen time, and using smartphones only, when necessary, you can make them live a physically active and energetic life. They can be encouraged to use smartphones to get knowledge regarding their health. This research mainly focuses on the senior's assessment of their health, yet we should likewise be mindful of impacts on the elderly's mental health. Further research can be made to explore the chronic or long-term influence of smartphone applications on the self-rated health of seniors. The dynamic effects of smartphone usage can also be an area of focus.

The previous studies also show how mobile phone usage is damaging the health of the elderly, showing that most of the population is affected by this.[11] The most common complaints are eye pain, an inability to focus, and tiredness after using a mobile device.[12] Studies also showed addiction to smartphones and depression are positively correlated causing an issue that needs greater research to fully understand requiring worldwide concern into this feature.[13] The use of mobile phones was positively associated with the social activity of the elderly.

Elderly people use mobile phones for social and non-social purposes, particularly social media.[14] Smartphones have positive as well as negative impacts. Some studies have also shown lower levels of depressive symptoms in Japanese people who used cell phones.[15] It saves from loneliness and cognitive decline but it has many harms as well. Thus, the effect of mobile phones on elderly health levels is not just a simple correlation but depends on a myriad of cultural, social, and behavioral elements as indicated by different studies.

Another study found that elderly people who use smartphones have better health than those who do not. The elders who used smartphones to gain health knowledge had better health.[16] Mobile phones, whose use is enhanced day by day, can act as a significant tool to help control and monitor the health of the elderly.[17] It is an entertainment gadget but it can be used to increase life quality and improved health services. The elderly who are cell phone addicts have better responses to stimuli.[18] Smartphone users lead a better life in terms of quality. They provide a platform for users to search for health-related information online and thereby cope with health problems.

Our studies have concluded that mobile phone usage has a significant effect on the lives of the elderly. While mobile phones have been a good means of communication, connection, and entertainment for the elderly, they might also have adversely affected their quality of life and mental health as most of the subjects spend most of their leisure time on the phones instead of seeking healthy activities and going out and meeting people. Being chronically online and addicted to social apps also changes the chemistry of the brain, as the subjects have been left feeling drained and mentally tired after long-time usage of mobile phones and are restless and bored in their absence.

CONCLUSION:

Smartphone usage is affecting the elderly in social, mental, and physical aspects of life. They are less socializing as a result of their excessive mobile usage. They feel tired, are less focused, and perform less physical activity. The elderly must be educated on how decreasing screen time will improve their mental and physical health.

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