

Health risk behaviors among university students: the role of outdoor sports and electronic sports

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Abstract

Purpose – Involvement of youth in electronic sports is increasing and outdoor sports are decreasing day by day. It not only affects their health but also leads them towards noncommunicable diseases. Risk of noncommunicable diseases is associated with physical inactivity and affects physical and mental health. It results in different personal and social implications. Therefore, the purpose of this paper is to highlight the importance of outdoor sports and risks of electronic sports for health.

Design/methodology/approach – The data for study is collected from 450 university students using purposive sampling technique. In order to measure outdoor sports, a four items instrument developed by Simon and Smoll (1974) is used. For electronic sports, instrument is adopted from Lemmens *et al.* (2009) and for health of youth, instrument by Bailis *et al.* (2003) is used. After reliability and validity check, structural equation modeling is used to analyze data.

Findings – The results reveal that perceived outdoor sports have significant positive impact on health, whereas electronic sports have negative impact on youth health that lead them to certain noncommunicable diseases. There is need to emphasize and encourage youth for outdoor sports and avoid indulging in esports that may lead to addiction.

Practical implications – Electronic games have various risks for the development of syndromes among younger generation. Awareness should be provided that physical activities are essential for healthy life and how risky be the esports for their health. This study may be helpful for government as well to reduce dependency of youth on technological devices and provide necessary recreation facilities to engage in. This research study validates that outdoor sports have significantly positive impact on health of youth and it reduces health related problems and destructive behaviors among youth.

Originality/value – Involvement of youth in electronic sports is increasing and outdoor sports are decreasing day by day. It not only affects their health, but also leads them toward non-communicable diseases. The present study examines the impact of esports and physical sports on youth health.

Keywords Outdoor sports, Electronic sports, Health, Youth, Pakistan

Paper type Research paper

1. Introduction

The progress, prosperity and future of any nation significantly depend on their youth (Morgan and Parker, 2017). According to Asrar-ul-Haq (2015), 60% of population in Pakistan lies under the age of 25 which shows its significance in the economic and social development of the country. Health is necessary element for enhancing the performance and personality of youth (Griffith *et al.*, 2017). Sports activities are closely associated to physical and mental health (Tsunoda *et al.*, 2015; Vedoy, 2020; Wang *et al.*, 2020). It is considered as foundation of



learning that generate a healthy lifestyle, enhance life skills and inject positive character among youth (Abu Samah *et al.*, 2017; Castagna *et al.*, 2018). The involvement of young generation in sports improves their mental and cognitive abilities, enhances their academic performance, develops leadership skills, boosts their self-confidence and builds connection with nation (Haitao *et al.*, 2021; Bean and Forneris, 2016; Santana *et al.*, 2017). Lear *et al.* (2017) reported that outdoor sports activities are independently related to decrease the risk of mortality. Further, it overcomes the burden of non-communicable diseases i.e. depression, hypertension, sleep deprivation, mental illness, diabetes mellitus, chronic disorder, obesity and cancer.

Technology is an important facet of modern life that has reduced physical activity of youth and influenced them towards activities with less physical efforts (Witt *et al.*, 2011; Woessner *et al.*, 2021). In particular, young generation has become addicted to technological devices. The popularity of electronic games is increasing among young generation and has changed the concept of sports (Jonasson and Thiborg, 2010; Chandrashekhar and Ravindra, 2020). Excessive amount of screen time (ST) is the main cause of certain noncommunicable diseases (Hoare *et al.*, 2016; Lee *et al.*, 2015; Paudel *et al.*, 2014; Ravikiran *et al.*, 2014). It weakens physical social attraction (Curvers *et al.*, 2018), and increases chances of premature death (Jenny *et al.*, 2017). In past, the habit of playing games on electronic devices among youth has been favorite activity in Western society (Maras *et al.*, 2015), but developing countries has no exception in this era (Khan and Burton, 2017). According to Pengpid *et al.* (2015), 80.6% risk of noncommunicable diseases among Pakistani youth is due to inactivity. In Pakistan, physically active adult population is only 22% (Anjum *et al.*, 2013). According to Khan and Burton (2017), 84% of youth in Pakistan is suffering from depression due to higher level of dependency on screen time. Many studies have been conducted on poor mental health and physical inactivity among youth in developed countries (Asare and Danquah, 2015; Biddle and Asare, 2011; Hoare *et al.*, 2016) with few exception in developing countries like Bangladesh (Khan and Burton, 2017; Pengpid *et al.*, 2015). As the sixth populous country in the world (Asrar-ul-Haq, 2015), there is need to study physical inactivity, leisure screen times, and how it affects youth health in Pakistan (Khan and Burton, 2017).

2. Literature review

2.1 Outdoor sports

Outdoor sports refer to involvement in outdoor activities which overcome health problems and enhance the individual performance (Hunt *et al.*, 2010). Outdoor sports are essential for everyone to attain health benefits and reduce 50% health diseases among youth (Tenforde and Fredericson, 2011). According to Lundy and Trawick-Smith (2021), outdoor sports have positive impact on youth cognitive abilities and enhanced in an efficient way. Rotheron *et al.* (2010) conducted study on adolescent of London and found that outdoor sports overcome the symptoms of depression. They were of the view that participation in sports activities should be deemed as important source of treating depression, anxiety and many other health problems. Furthermore, they also elucidated that outdoor sports activity of minimum 30 minutes bring multiple benefits for mental and physical well-being of an individuals.

2.2 Relationship between outdoor sports and health of youth

Mark and Janssen (2008) suggested reducing screen base activities and involving in outdoor sports to overcome the risk of metabolic syndromes among youth. Also, Sugiyama *et al.* (2008) found that esports are significant predictor of obesity. Their findings revealed that chances of obesity are low among those who are actively involved in outdoor sports. Armour *et al.* (2013) stated that outdoor sports are internally associated with health and improved

performance. Marques *et al.* (2016) also demonstrated that involvements in outdoor sports activities are helpful for continuous self-assessment and personality enhancement. It is evident in literature that outdoor sports enhanced mental and cognitive abilities of youth and helped them against non-communicable diseases (Reed *et al.*, 2013). Sports activities strengthen the muscular activity and enhance motor skills that influence young people to increase their efficiency in an efficient way (Stodden *et al.*, 2014). Physical activities are helpful to reduce the risk of lung cancer and chronic obstructive pulmonary diseases (Garcia-Aymerich *et al.*, 2007). Eime *et al.* (2013) studied the relationship between outdoor sports and psychological and social health benefits. They suggest that outdoor sports activities are equally important for youngsters and children. They are of the view that at least sports activity of 60–75 minutes per day is necessary to overcome the stress of obesities (Ekelund *et al.*, 2016). According to Breslin *et al.* (2017), outdoor sports provide helpful guidelines for youngsters to overcome their mental problems by indulging in healthy outdoor activities. This is validated in many other studies that outdoor sports have numerous benefits for health (Doull *et al.*, 2018; Hardie Murphy *et al.*, 2017; Mitra *et al.*, 2017). However, there is still need to examine this relationship in Pakistani context. Therefore, this is hypothesized that:

H1. Outdoor sports activities have significantly positive impact on youth health.

2.3 Electronic sports

Electronic sports defined as “a form of sports where the primary aspects of the sports are facilitated by electronic system, the input of players and teams as well as the output of the e-sports system are mediated by human-computer interfaces” (Hamari and Sjoblem, 2017). Sedentary behaviors are strongly influence youth to connect electronic sports that highly generate depression and increased other problems of health among them (Sund *et al.*, 2011). Wang *et al.* (2008) elucidated that those who playing electronic sports are become less satisfied with their life. However, screens based activities (playing electronic games on computers, laptops and smartphones) increased health problems among young generation (Nuutinen *et al.*, 2013).

2.4 Relationship between electronic sports and health of youth

Electronic sports increases violent behavior toward others and influence them to indulge with unhealthy behavior that have severe effect on youth health (Wattanapisit *et al.*, 2020). The dependencies on electronic sports were strongly associated to poor physical health (Carson and Janssen, 2011). Furthermore, electronic sports reduce self-confidence among youngsters and minimized physical connection with others which increase loneliness among them (Colwell and Kato, 2003). Scott (1995) explained that 85% of video games have hostile effect on youth health and persuade them to misbehave with others. The electronic games increases negative thoughts and unfriendly feeling toward their peers which leads them to suffer with various psychological problems (Anderson and Dill, 2000) or non-communicable diseases (Mistry and Puthusser, 2015). Moreover, addiction of electronic sports strongly associated to sedentary behaviors that increased cardiovascular disease (Dooley, 2021) blood pressure, depression (Goldfield *et al.*, 2011) and risk of cancer among youngsters (Rehbein *et al.*, 2010). According to (Mathers *et al.*, 2009), their study results indicated that 84% of youth are addicted to playing electronic games in which 90% of boys and 75% of girls have poor physical and mental health. Also, video games are related to increase cardiovascular disease and metabolic syndrome such as high blood pressure, high fasting glucose, and high triglycerides which have severe effect on youth health (Mark and Janssen, 2008). However, in electronic sports a huge amount of literature available but hardly any literature is obtained about electronic sports in developing countries like Pakistan. Based on the above literature,

the existing research is trying to examine the impact of electronic sports on youth health in division of Sahiwal, Punjab, Pakistan. Hence we proposed that:

H2. Electronic sports activities have significantly negative impact on youth health.

2.5 Theoretical framework

Theoretical framework is represented in [Figure 1](#).

3. Method

The purpose of this section is to deliver complete explanation of the particular procedures which were taken to discourse the research dilemma.

3.1 Participant and procedure

The data of this study collected from youngsters between the ages of 21–30 who were interested to participate in games. In order to highlight the youth interest in outdoor sports and electronic sports, we specifically target graduate and postgraduate students of public and private universities in Sahiwal, Pakistan, through self-administered questionnaire. Total 550 questionnaires were distributed through purposeful sampling technique and 500 responses were collected in total. After excluding, missing values questionnaire, the valid responses were 450 with response rate 85%. For the distribution of questionnaires, personal visits were conducted with the permission of head of institute at private and public universities of Sahiwal.

3.2 Measures

There were two independent variables (outdoor sports and electronic sports) and one independent variable (health). A five-point Likert scale was used to measure respondents' interest, addiction and perceived changes in their health or social relations. In order to measure outdoor sports, a four items instrument developed by [Simon and Smoll \(1974\)](#) is used. For measurement of electronic sports, instrument is adopted from [Lemmens et al. \(2009\)](#). This is further classified into seven subfactors with twenty items. Subfactors include salience, conflicts, mood modification, tolerance, withdrawal, relapse and problems. For health of youth, instrument by [Bailis et al. \(2003\)](#) is used.

3.3 Statistical analysis

The analysis is conducted by using SPSS 22.0 to analyze the relationship of outdoor and electronic sports with youth health. For verification of data the reliability and validity tests were done which reflect that data is reliable. The Pearson correlation coefficient has used to measure the association between variables. Through skewness and kurtosis, the data

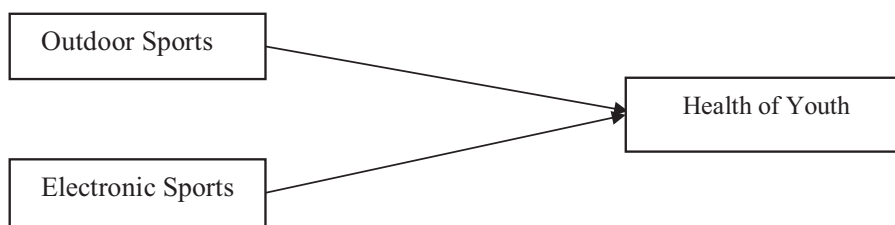


Figure 1.
Theoretical framework

4. Results

4.1 Demographic information

The sample consist of 450 Graduate and postgraduate students. The demographics results (Table 1) show that the percentage of male who participates in this survey is 55% (246) while there are 204 females who show their interest to participate in games. It represent that the male participation were more than female. The results showed that 58% respondents are from of 21–26 and remaining 42% are from 26 to 30 age groups.

Thirdly if we discuss the education level 252 are graduated students and 152 are post-graduate students and their Educational Institute are also discussed that 36.4% are private institute who participate in this survey and 63.6% are government institute. In fact their cities also mention that 70% data collected in Sahiwal and 29.3% data were collect from Pakpattan city. Through bar chart it were confirmed that participation of youth in outdoor sports are only 30% and 60% of youth are interested to participate in electronic games. These 60% of youth show no interest to participate in any outdoor sports.

4.2 Confirmatory factor analysis measurement model

Factor analysis has two types, exploratory and confirmatory factor analysis. We carried confirmatory factor analysis because in this study the adapted questionnaire were used. CFA also useful for knowing about the reliability and validity of the measurement model. Measurement model is shown in Figure 2 and model fit indices (RMSEA = 0.07, RMR = 0.04, CFI = 0.96, TLI = 0.96 and CMIN/DF = 2.2) indicated that model is best fit. The factor loading of each item ranged from 0.52 to 0.98 which is above the threshold value. Table 2 indicates the factor loading score, composite reliability (CR) and average variance extracted (AVE).

4.3 Reliability and validity

Reliability of variables is checked through composite reliability (CR) and Cronbach's (α). The value of Cronbach's alpha (Table 2) for outdoor sports, electronic sports and health are

| | | Frequency | Percent |
|-----------------------|-------------------|-----------|---------|
| Gender | Male | 246 | 54.7 |
| | Female | 204 | 45.3 |
| | Total | 450 | 100.0 |
| Age(in year) | 21–26 | 261 | 58.0 |
| | 26–30 | 189 | 42.0 |
| | Total | 450 | 100.0 |
| Education | Graduated student | 252 | 56.0 |
| | Postgraduated | 198 | 44.0 |
| | Total | 450 | 100.0 |
| Educational Institute | Private | 164 | 36.4 |
| | Government | 286 | 63.6 |
| | Total | 450 | 100.0 |
| City | Sahiwal | 318 | 70.7 |
| | Pakpattan | 132 | 29.3 |
| | Total | 450 | 100.0 |

Table 1.
Demographic profile

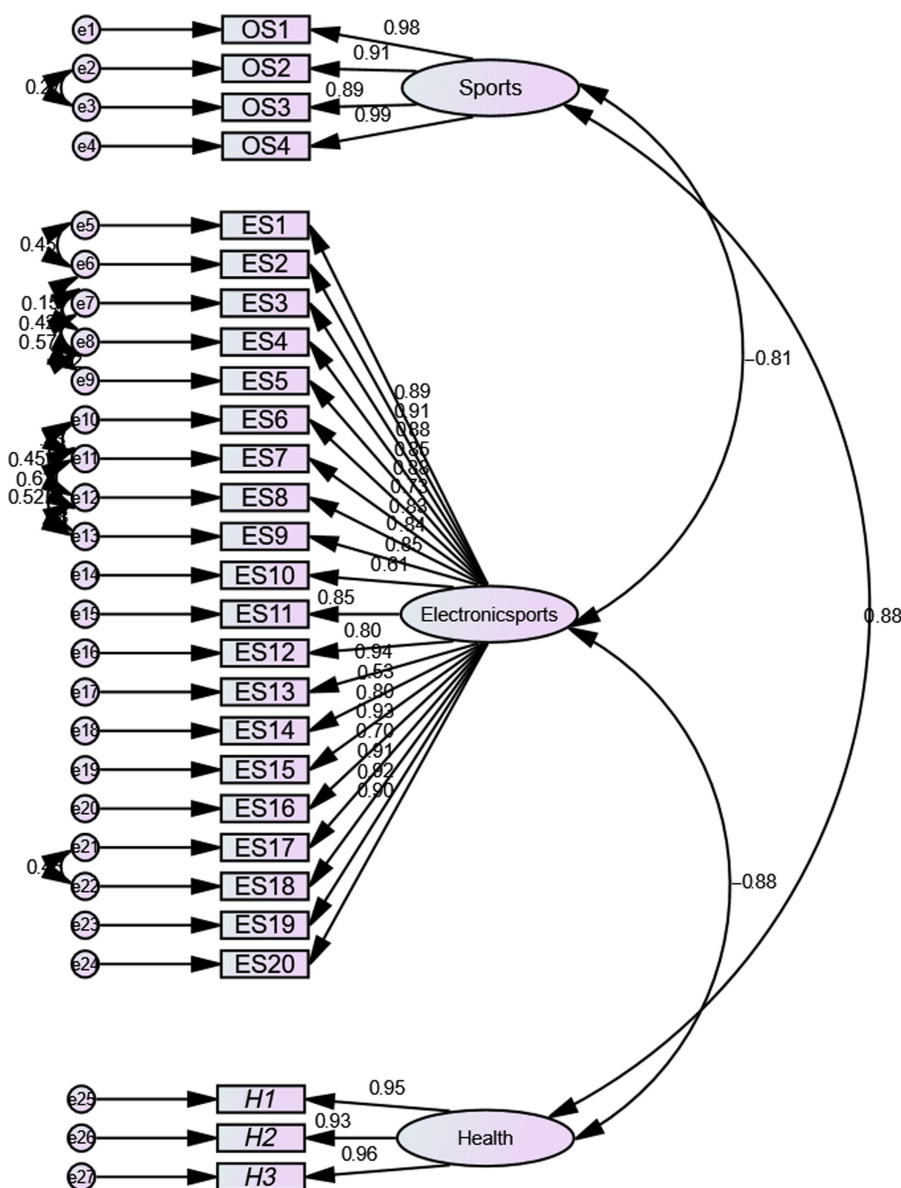


Figure 2. Measurement model

0.89, 0.97 and 0.96 respectively. The value of CR is greater than 0.7 for each variable as shown in Table 2. The validity can also be proved with the help of convergent and discriminant validity. The value of average variance extracted (AVE) score higher than 0.5 which clearly demonstrate that convergent validity is achieved for each variable (Fornell and Larcker, 1981). Hence, discriminant validity is determined through square root of AVE. The square root of the AVE is greater than the square of the inner scale correlation and discriminant validity is also achieved.

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Table 2.
Factor loadings and
AVE values

| Items | Estimate | AVE | CR | A |
|-------|----------|----------|----------|-------|
| HI | 0.951 | | | |
| H2 | 0.962 | | | |
| H3 | 0.962 | 0.895774 | 0.962654 | 0.961 |
| OS1 | 0.985 | | | |
| OS2 | 0.913 | | | |
| OS3 | 0.885 | | | |
| OS4 | 0.988 | 0.890791 | 0.970197 | 0.891 |
| ES1 | 0.887 | | | |
| ES2 | 0.909 | | | |
| ES3 | 0.878 | | | |
| ES4 | 0.846 | | | |
| ES5 | 0.883 | | | |
| ES6 | 0.729 | | | |
| ES7 | 0.828 | | | |
| ES8 | 0.838 | | | |
| ES9 | 0.846 | | | |
| ES10 | 0.615 | | | |
| ES11 | 0.852 | | | |
| ES12 | 0.802 | | | |
| ES13 | 0.941 | | | |
| ES14 | 0.529 | | | |
| ES15 | 0.798 | | | |
| ES16 | 0.93 | | | |
| ES17 | 0.703 | | | |
| ES18 | 0.91 | | | |
| ES19 | 0.916 | | | |
| ES20 | 0.899 | 0.694912 | 0.97818 | 0.972 |

4.4 Correlation analysis

Correlation analysis was observed with the support of discriminant validity of each measure that verified its uni-dimensionality through confirmatory analysis. Table 3 represents the results of Pearson correlation. Outdoor sports positively correlated with health ($r = 0.854$, $p = 0.000$) while electronic sports negatively associated with health ($r = -0.853$, $p = 0.000$). Multicollinearity is analyzed through variance inflation factor (VIF) and the value of VIF is less than threshold value.

4.5 SEM results for the structural model and hypotheses testing

The hypothesized theoretical model was analyzed through structure equation modeling (SEM). SEM measures the degree and strength of association between the observed variables more correctly than other statistics (Byrne, 2016). The value of fit indices (CMIN/DF = 2.3, RMR = 0.056, CFI = 0.97, RMSEA = 0.054 and NFI = 0.96) show that model is best fit, as all values are within the recommended range.

Table 3.
Correlation analysis

| | OS | ES | H |
|---------------------|-----------|-----------|---|
| OS (outdoor sports) | 1 | | |
| ES | -0.791*** | 1 | |
| H | 0.854*** | -0.853*** | 1 |

Note(s): *** correlation is significant at the 0.001 level (2 tailed)

Table 4 provides the results of structural model given below. It shows that outdoor sports has positive significant effect on youth health (Estimates = 0.51, SE = 0.022, CR = 14.119, P -value = 0.001). Hence, H1 is accepted. On the other hand, the result also reveal that electronic sports has significantly negative impact on youth health (Estimate = -0.46, SE = 0.032, CR = -12.336, P -value = 0.001). So, H2 is also accepted. The diagram of the structural model is presented in Figure 3.

5. Discussion

The risk of noncommunicable diseases is prevalent among younger generation due to screen devices and physical inactivity. From this perspective, the education about health is very important for youth that they should take their life seriously and survive happily. Hence, this paper has focused the impact of outdoor and electronic sports on youth health. This study finding demonstrates a clear picture about the health status of youth from participation in outdoor sports and electronic sports. The results of present study suggest that youth who participate in outdoors sports have positive health status, which is in accordance with the findings of past studies (Dodge and Lambert, 2009; Hall *et al.*, 2016; Torstveit *et al.*, 2018; Bélanger *et al.*, 2019; Moral-García *et al.*, 2020; Bjørnarå *et al.*, 2021; Miguet *et al.*, 2021). The present results elucidate that the participation of youth in electronic games had negative impact on their health. It is evident that electronic sports causes sleep deprivation, depression and complex social relations (Mentzoni *et al.*, 2011; Witt *et al.*, 2011; Paulus *et al.*, 2018; Chang and Lin, 2019; Wong *et al.*, 2020; Stavropoulos *et al.*, 2021; Wang *et al.*, 2021; Koban *et al.*, 2021; Seton and Fitzgerald, 2021). Outdoor sports in Sahiwal are not only traditional and cultural reflections in Sahiwal, but are healthy for life. It is believed that traditional games have its own beauty that lead all people together and create good atmosphere within surroundings. Hence, this study findings provide an insight to the practitioners in sports sector of Pakistan to understand their consumer preferences because sport industry has also face a challenge of market environment in the form of most demanding consumer that attracted by electronic sports in Pakistan. This study helps them to create marketing policies and advertise their products with such attractive messages that are relevant to healthy and happy life. Outdoor sports activities protect young generation from non-communicable diseases and unhealthy behavior and persuade them to become physically fit and healthy. There are certain implications for health care sector in Pakistan also because youth involvement in outdoor sports brings positive change in their health. The health systems must be careful for people because sedentary lifestyle represents serious public issue that spoiled youth health directly and indirectly. Through these electronic games, various potential problems occur for the development syndromes among younger generation. The health system of Pakistan must provide awareness from younger generation that physical activities are essential for healthy life. Hence, this study is particularly important and helpful for Pakistani youth as huge dependency of youth on technological devices is not only increasing the rate of depression but also lead them toward mortality. Electronic games also influence loneliness among them and limit face to face interaction between their families and friends when they spend much of their time to playing these video games. The existing study provides an opportunity for youth to

| Coefficient path | | | Estimate | SE | CR | P |
|------------------|----|-------------------|----------|-------|---------|-----|
| Health | <— | Sports | 0.51 | 0.022 | 14.119 | *** |
| Health | <— | Electronic sports | -0.46 | 0.032 | -12.336 | *** |

Note(s): *** $p < 0.001$

Table 4.
Summary of the result

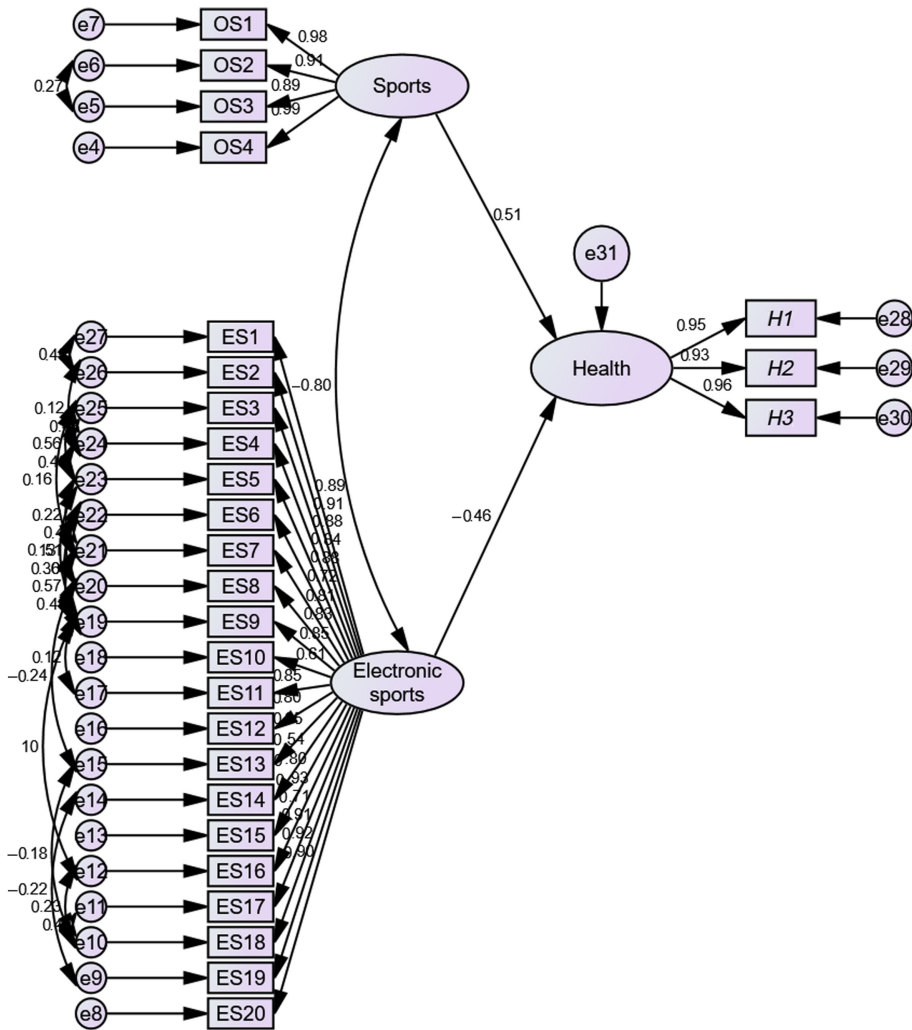


Figure 3.
Structure model

recognize that importance of outdoor sports for their health. This study may be helpful for Government also to reduce dependency of youth on technological devices and provide necessary recreation facilities to engage in. They should also promote healthy activities among their younger generation that they utilize their functional capabilities and ultimately enhance their mental competences. This research study validates that outdoor sports have significantly positive impact on health of youth and it reduces health related problems and destructive behaviors among youth.

6. Conclusion

To conclude, this paper extended the discussion in specific context about the impact of outdoor and electronic sports on youth health. Health is considered as key driver for

development and capacity building of youth. Pakistan is a developing country with more than fifty percent young population. If particular attention is given to young generation, many socio economic challenges of the country will be automatically addressed.

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Further reading

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