Title:

Study of screen based media usage and associated negative health conditions among the adolescents of Maldives

Organization
Maldives National University

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Designation / Position
Student at FHS

Duration of the project
5 months (July 2015 to November 2015)
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2. Body

2.1: Introduction:

Around ten years back, one of the leading local newspaper reported that the use of screen based media devices are increasing its popularity in Maldives (Haveeru News Service, 2005). Since screen based media devices was introduced in to Maldives, use of these devices has become an essential part of business, education and societal needs even in Maldives. Developers bring these technologies in to the market with great promises for social and educational benefits. However, their use and purpose differ among the societies and age groups, adolescents in particular, spend more time for leisure activities like video gaming, music, and texting. Moreover, time and place of use is boundless when it comes to adolescents. Younger generation use these devices round the clock, in office, class rooms, restaurants, playgrounds and on streets (Neera, 2014). Simply, they use it whenever and where ever they are without considering the negative health effects of its use.

Long term and excessive use of these devices may lead to many health conditions. Improper use of mobile phones can lead to headaches, earache and sleep depreciation which might causes drowsiness, difficulty concentrating, and depression. (Hysing, Pallesen, Stormark, Jakobsen, Lundervold, & Sivertsen, 2015). Excessive use of these devices may lead to repetitive stress injuries, postural, muscular and skeletal disorders like tendonitis, nerve compression and carpal tunnel syndrome. In addition long term viewing on screens can strain eyes or can worsen existing eye conditions, eye discomfort and itchy eyes.
Further, use of these devices changes into an addiction hence adolescents lost concentration on education and job performance (Zein El Dein, 2013). Improper use of these technologies not only effect health, rather it brings devastating consequences to their educational performance. Therefore it is vital to find out their habit of use of these devices and public health professional can develop health promotion activities to tackle these issues.

2.2. Purpose of the study and Objectives:

Purpose of this study is to gain an understanding of the types, frequency and associated negative health consequences in relation with use of screen based media devices among adolescents of Maldives.

As far as the local literature and available authentic data sources, this study can be counted as the first of its kind in the Maldives. Therefore the findings of this research can positively make a significant contribution to the current body of knowledge and most importantly, the outcomes of this study would hopefully form the basis for new health strategy and policy for both public and school health system in the Maldives. In addition, the parents will have a better understanding about the issue, hence may be able to protect their children from negative health consequences of screen based media devices.

General Objective

The general objective of this study is to understand the types, frequency and associated negative health consequences of using electronic screen based media devices among adolescents of Maldives.
Specific Objectives

The specific objectives of this study are

a. To understand the types of screen based media devices used by adolescents

b. To assess the prevalence of screen based media device use among adolescents

c. Assess harmful health effects associated with use of screen based media device on adolescence of Maldives

3: Review of the Literature

Today, screen based media devices are an essential part of adolescence's lives throughout the globe. These technological devices are embedded with adolescent’s daily activities so much that they cannot spend a single day without it. Some of these devices include iPad, mobile phones, tablets and laptops and today these devices has turned from a technological tool to a social tool. (Strasburger, & Hogan, 2013). In this literature review, screen based media devices were explored in terms of its prevalence and negative health consequences of its use. Prevalence was explored, in terms of type of gadgets, duration and the purpose of use in relation with use of screen based media devices. As a negative health impact of its use, some of the consequences associated with psychological and physical health conditions like sleeping disorders,
musculoskeletal conditions and, eye problems will be explained in relation with screen based media devices.

**Screen based media devices**

In this study, the term screen based media devices are specific to the following electronic gadgets

Smart phone, iPad, Tablet and Laptop

2.1 What kind of screen based media devices people prefer to use?

In local context, official data of customer preferences on screen based media devices are not available. However, data from related government authorities shows the total number of devices imported and the total number of mobile consumers within the country. The statistics of Maldives, customs service shows that 8575 iPad and Tablets, 161199 smart phone and 12265 laptops were imported to the country during the year 2014 (Maldives custom service, 2015). the data of Communication Authority of Maldives (CAM), shows that total number of mobile subscribers reached to 681,435 in February of year 2015 (Communication Authority of Maldives, 2015). The amount of mobile users are two times more than the country’s population.

These devices usually works best or people prefer to use with internet services. According to Communication Authority of Maldives (2015), there are 173,737 Mobile Broadband Subscribers and 20,739 fixed broadband subscribers in the country. However, the prevalence of use of these devices are not being studied or formally published in Maldives, this subject is being explored in various parts of the globe.
Studies conducted in neighboring countries like India and Malaysia shows that 50 percent of the study population use three or more electronic screen based devices, including smartphone, tablet and laptops (Chiang, 2013). Living standard of Maldivians is high when compared to the India. If 50 percent of population owns three devices in India, this rate might be higher in Maldives.

One of the richest and developed country nearby Maldives is Singapore. 69 percent of people from Singapore uses three or more electronic screen based media devices (Chiang, 2013) and amazingly among the population of western developed countries like USA, 97% of adolescents use at least one electronic media device (Hysing, et al, 2015).

When this fact is reviewed globally, modern technologies are becoming a basic need, leaving the real life necessities far behind. An online journal called “Business Insider” reports that “on an average, there will be two smartphones for every nine people on earth, 6% of the global population will own a tablet, and 20% will own PCs by the end of 2013. (Hugeston, 2013). More amazingly the United Nations (UN) reports that, more people have smart phones than access to drinkable water and safe sanitation (as cited in World health Organization, 2014). According to World Health Organization (2014) of the world’s seven billion people, six billion have mobile phones. However, only 4.5 billion have access to toilets or latrines. These facts shows that the modern technologies like screen based media devices are so popular and people consider possessing of these gadgets are more important than some of their daily needs like water, electricity and sanitation.
2.2 Why people use screen based media devices

The modern technologies are manufactured with great promise of social and educational benefits (Zein El Dein, 2013). However, people from different societies and age groups use these devices for different purpose. While adults use these devices for communication, business and educational purpose, mostly adolescents use modern technologies to fill their free times. Texting, communicating, online gaming, internet browsing, enjoying in social networks, watching video and playing games are some of the main activities they engage if they have any of these devices (Zein El Dein, 2013). In USA, 88% of teenagers (between 13 to 17 years of age) use mobile phones more to text than talk and on an average they send 3364 texts per month (Strasburger, & Hogan, 2013).

A study conducted in United States of America (USA) shows that 37% of iPad users use it for web browsing, 21% of the study population use it for communication purpose like check emails, Facebook and twitter. 12.3 % of them use it to watch videos and 11 percent of them play games by using iPad (Yarow, 2012). In the same city of USA, students of the City University reported that they use these technologies not for study purpose but for social networking. (Smith, Caruso and Kim, 2010) according to the authors of this study, 96% of students said they were on Facebook. 23% said they were on MySpace, making text-messaging and social networking as a primary usage of technology (Smith, Caruso and Kim, 2010).
2.3 Who uses screen based media devices

In local context, literatures are not available on the subject under study. Previous research data does not exist in any authority in relation with screen based media users. Therefore data on nature of consumers of technological devices like smart phone, iPad, tablets and laptops are unknown among the population of Maldives. The scenario of using mobile devices is more or less same across the gender and age within all countries. Men uses more than women, middle aged population uses more than senior citizens and adolescents use more than children. Statistics of United States of America shows that use of these devices are more common among men (93%) than women (88%). Between the ages 18 to 54 the ownership is significantly equal (55%) and possession decreases with age (Rainie, 2013).

When the data of usage among age categories is explored, it reveals that children start using these devices at a very early age as young as 2 years old. The result of a study called zero to eight conducted in USA revealed that, in the year 2013, 72 percent of children below eight have used tablets or smartphones and among them more than 33% of babies are under two years of age (Rideout, 2013). Among this age group 63% have access to smart phone and 43% of children have iPad to play with.

Further, statistics reveals that, age between 12 to 35 years has the most number of consumers. In United Arab Emirates 81 percent of population between the age 16-34 uses smart phone (Neera, 2014). Universally, the population between the age group of 16 to 24 years of age has the highest rate (88%) of smart phone possession and this
figures goes down with the age. 85% among the age group of 25-34, 70% among 34-44-years, 30% of adults aged 55-64 and 11% for those aged 65 and older. (Neera, 2014).

2.4 Health problems associated with screen based media devices

Technological devices like smart phones, iPads or laptops can be used to maintain a healthy life style. They can be used to acquire proper knowledge on health promotion, medications, diseases and access to health care. Today, these devices are furnished with sophisticated applications to monitor heart rates and blood glucose level. In addition there are interactive medical teaching software which make the learning process very simple. However, these devices has many benefits in relation with human health, it seems that most of the consumers never had the intention to use it in a beneficial perspective. As a result of misuse, users often face the negative health impacts including psychological and physical health conditions.

2.4.1 Psychological problems associated with screen based media

Excessive screen-based media use has been associated with several negative outcomes among developing children and adolescents. Research has shown that increasing use of digital and screen-based media may be impairing children’s ability to develop social skills, as they have less opportunity for face-to-face interaction (Rainie, 2013). Studies done on children, revealed that, if they are exposed excessively to screens, it leads to reduced feelings of their social acceptance, increased feeling of loneliness
and develops aggressive behavior problems (Public Health England, 2013). The same research indicates that, children who spend more time on playing games, watching videos, from these devices are associated with lower self-esteem and lower levels of self-reported happiness. More than that, they experience higher levels of emotional distress, anxiety and depression. (Public Health England, 2013)

Excessive use of these devices can influence the sleep pattern of individuals. A large survey carried out in Norway reveals that 50% of teenagers spend more than 4 hours a day on screens, hence they are 3.5 times more likely to have reduced sleep. Sleep deprivation causes drowsiness, difficulty concentrating, and depression of the immune system. (Hysing, et al, 2015).

A study conducted in Indiana University shows that 89% of the study population experienced a condition called phantom vibration when their phones are not really vibrating. This condition happens when users are dependent on text messages, social media updates and anxious to read them frequently (Hawkins, 2014)

Addiction to mobile devices is a growing issue in many countries, especially among adolescents

2.4.2 Physical health issues associated with screen based media devices

Technologically advances devices like mobile phones, Tablets, iPads and laptops are most sought devices among the people and its use is priceless if it is used for the intended purpose. Even though these devices helps to simplify our lives, it can lead the consumer to negative health consequences. Type and severity of these conditions strictly depends on user’s behavior. Non-medical terms like “Nomophobia”, "Text
"Cell Phone Elbow" are terms used in social media which occurs due to misuse of above mentioned devices (Hawkins, 2014). As a major negative health consequence of using screen based media devices include certain diseases of musculoskeletal system, eye, and nervous system.

**Musculoskeletal conditions.**

Misuse or excessive use of body muscles and tissues leads to worn-out of the part being used. Fingers, wrist and elbow joints are frequently used body parts while handling screen based media devices. Even though the physical actions are very light, Injuries to these parts are result from, frequent repetitive actions last for long hours, that affect the muscles, tendons, and nerves (Zein El Dein, 2013).

A disease called de Quervain syndrome, develops in people who frequently use their thumbs to type text messages on these devices (Tessler, 2012). Further, a disease called carpal tunnel syndrome which affects the wrist is the most common disease related to excessive pressure on median nerve of the wrist (Tessler, 2012).

Postural disorders and back bone conditions are not uncommon among those who use these devices over long extent and retain in certain postures that effect the muscle and bones. Forward head or "poking-chin" posture, a kyphotic back and rounded shoulders, are some of the skeletal defects that can be caused by fixed postural habits related to use of these devices (Tessler, 2012).

A study conducted in Nigerian University reveals that prevalence of musculoskeletal pain among undergraduate laptop users are high among the university undergraduate
students and shoulder pain was the most commonly reported condition (Obembe, Johnson, Tanimowo, Onihinle, and Emechete, 2013).

Eye conditions:

A condition called Computer Vision Syndrome is characterized by eye strain, blurred vision and can be caused by gazing through the small fonts in text and struggling to see the characters and images that aren’t clear enough (Hawkins, 2014). This condition is associated with symptoms like eye pain, redness, blurred or double vision and headaches (Tessler, 2012). Excessive use of screen based devices can lead to new eye conditions or it can even worsen existing eye conditions.

Conclusion

Excessive and miss use of screen based media devices is a growing turmoil in societies. Literature brings in to focus that consuming rate of these devices is extremely high among the younger generation. While in certain societies, adolescents own more than two devices, possessing a single device is considered like a human basic need throughout the world. Even though these gadgets are produced to simplify the life, activities carried out via this specific devices are not always legal and beneficial for the users. Excessive texting, gaming and online social networking is common among adolescents and it leads to many health consequences like social, psychological and physical health conditions. While it leads to sleeping disorders, anxiety and depression, constant pressure on nerves and tendons due to excessive use of these devices, leads to musculoskeletal diseases. In addition, eyes are effected badly causing new issues or worsening existing conditions if one is misusing screen based media devices.
4: Methodology

4.1 Research design:

Since the study objectives involve assessing a frequency and health related features among a population, cross sectional design will be used to assess the objective of the study. This study relies on collecting data from a single point of time without manipulating the environment, cross sectional studies can be considered most appropriate method to collect this data. Silva (1999) explains cross sectional studies as “studies aimed at determining the frequency (or level) of a particular attribute, such as a specific exposure, disease or any other health-related event, in a defined population at a particular point in time”. When compared to other study designs, cross sectional design consumes less time, economically feasible and it is simple to carry out.

4.2 Definitions of terms

Adolescents: in this study, adolescents are defined as boys and girls between 13 and 19 years of age

Ipad: “A small portable computer activated by touching the screen” (dictionary.com, 2015).

Smart phone “A mobile telephone with computer features that may enable it to interact with computerized systems, send e-mails, and access the web” (dictionary.com, 2015).

Tablets: “Portable computer, usually battery-powered, having a touchscreen as the primary interface and input device and lacking a physical keyboard and lid” (dictionary.com, 2015).
4.3 Delimitations and limitations of the study

Studies of this nature present several limitations itself. At the beginning Cross-sectional, quantitative study is just like a snapshot. The situation may provide differing results if another time-frame had been used.

The result of the study will rely on self-administered anonymous questionnaire and participants may not give real information in relation with their behavior. They may hide or they might not be able to recall the information associated with health issues. (Recall bias).

The study population will be taken from capital of Maldives hence it may not represents the true community of adolescents of Maldives

4.4 Significance of the study:

The outcome of this study will provide evidence and will facilitate to formulate guideline to safeguard adolescents from harmful effects associated with screen based media devices.

It will also provide suggestions and recommendation to plan and conduct health promotion programs required for public health professionals. In addition, the outcome of this research will help to increase awareness among parents in relation with screen based media devices and its harmful effects.

The outcome of this research will be benefited by parents, teachers, public health professionals and policymakers in Maldives.
4.5 Sample, population or subjects:

Target population will be the students of grade 11 and 12 from Centre for Higher Secondary Education, Villa International High School, and Ahmadiyya International School. According to data of these three schools, there are total of 2351 students studying and they will be considered as the target population of this study.

A sample determination table (Table 3.41) created by Krejcie and Morgan (cited in Sekaran & Bougie, 2014) was used to determine the sample size, considering 95% of confidence interval. The given figure in the table for a population of 2400 is 331. Five more students will be selected for sample distribution convenience among schools, grades and genders and 336 students will be selected as a sample for the study from a target population.

4.6 Instruments and materials:

A structured questionnaire will be used to collect data. Questionnaire will have four main categories including demography, type, use and health consequences of use of electronic screen based media devices. (Questionnaire attached in Appendices A)

In demography, age, sex, class and stream will be asked. In section B, 8 questions will be asked where answers are based on category scale to explore the types of device they use. In section C, 7 question will be asked to find out the prevalence of use and answers are based on category scale. In section D, health issues will be explored with whelp of 15 questions where its answers are on semantic differential scale.
4.7 Data analysis:

Contact details of selected students will be taken from the school and a home visit will be made to interview with them. Students will be asked to fill the questionnaire, after explaining the purpose of the research and signing his/her consent to participate in the study. They will be allowed to fill the questionnaire on their own and will be guided throughout the procedure. Health conditions related to screen based devices will be ascertained by checking the medical documents if it is available.

To maintain the reliability and validity of the data gathered, and to limit the bias, use of other enumerators will not be allowed. Further, researcher will be staying with participants till they finish the questionnaire. Quarries arise during the filling process will be explained and solved immediately.

4.8: Dissemination:

A final report will be submitted to faculty of health sciences as partial fulfilment of the requirements for the award of the degree of master in public health, in the faculty of health sciences, the Maldives National University

5: CV and training:

Chief investigator  Mohamed Najeeb

[Student of Faculty of health sciences]

Maldives National University
6: Project costs and time frame

a) Budget details

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b) Time Frame

Project duration is five months from July to November 2015

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7: Ethical considerations

Since participants of this study involves minors (who are below 18 years of age), special consent will be taken from their parents to protect their rights. To maintain respondent's confidentiality, they will be assured that their identity and information they provide will be kept private and a consent will be sought from all respondents before they fill the questionnaire. Participants will be free to withdraw from the study at any time they wish.
8: References


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9: Appendices

Appendices A

Questionnaire

Study of screen based media usage and associated negative health problems among the adolescents of Maldives

Questionnaire

Section A

Demographics

1. age
2. sex
3. grade
4. stream

Section B

Type of device

5. Do you own any of the following device

Smart phone [ ] iPad [ ] Tablet [ ] Laptop [ ]

No. I don’t have [ ]

6. If “Yes”, to Q.5 how many?

Smart phone [ ] iPad [ ] Tablet [ ] Laptop [ ]
7. If No to Q. 5, what is the reason
   a) Not mature enough  □
   b) Not interested  □
   c) Parents are not allowing  □
   d) Cannot buy  □

8. Do your family has any of the following devices
   Smart phone  □      iPad  □      Tablet  □      Laptop  □
   No  □

9. If “Yes”, to Q.8, how many?
   Smart phone  □      iPad  □      Tablet  □      Laptop  □

10. Do you have access or use any of the following device
    Smart phone  □      iPad  □      Tablet  □      Laptop  □
    No  □

11. If “Yes” to Q. 10, whose device you use?
    My own  □      family member  □      friends  □      class mates  □

12. If “No” to Q. 10.
    Not interested  □      Not available  □      Restricted by parents  □

If you have answered Q 11, please go to Q13
If you have answered Q 12, that will be the end of the interview for you
15. If you use a mobile phone, on an average how many calls do you make per day

| 1-5 | 6-10 | 10-15 | 15-20 | >20 |

16. If you text from a mobile phone, on an average how many SMS do you send per day

| 1-5 | 6-10 | 11-15 | 16-20 | 21-25 |
| 26-30 | >30 |

17. If you use internet from any of the following devices, on an average how many hours do you spend on internet per day

- Smart phone ........
- iPad ..........
- Tablet..........
- Laptop ..........

18. If you play games from any of the following devices, on an average how many hours do you spend to play games per day

- Smart phone ........
- iPad ........
- Tablet.........
- Laptop ..........

19. Do you use any of the following devices before you go to sleep (after 9 pm)

- Smart phone □
- iPad □
- Tablet □
- laptop □
Section D

Health issues

20. How often have you been awakened by your mobile phone at night?
   - Never
   - Occasionally
   - Few times a month
   - Few times a week
   - Almost every night

21. How often have you stayed up later than you wanted in order to use your phone, iPad, tablet or laptop
   - Never
   - Occasionally
   - A few times a month
   - A few times a week
   - Almost every day

22. Do you have sleeping problems from use of your phone, iPad, Tablet or laptop
   - Non
   - Mild
   - Moderate
   - Severe

23. Do you feel lack of concentration in your study after starting use of phone, iPad, Tablet or laptop
   - Non
   - Mild
   - Moderate
   - Severe

24. Do you feel backache when you use phone, iPad, Tablet or laptop
   - Non
   - Mild
   - Moderate
   - Severe
25. Do you have pain in thumbs or in other fingers when you use Phone, iPad, Tablet or Laptop

- [ ] Non
- [ ] Mild
- [ ] Moderate
- [ ] Severe

26. Do you feel wrist pain when you use Phone, iPad, Tablet or Laptop

- [ ] Non
- [ ] Mild
- [ ] Moderate
- [ ] Severe

27. Do you have itchy Eyes when you use Phone, iPad, Tablet or Laptop

- [ ] Non
- [ ] Mild
- [ ] Moderate
- [ ] Severe

28. Do you have Eyes irritation when you use Phone, iPad, Tablet or Laptop

- [ ] Non
- [ ] Mild
- [ ] Moderate
- [ ] Severe

29. Do you have blurred vision when you use Phone, iPad, Tablet or Laptop

- [ ] Non
- [ ] Mild
- [ ] Moderate
- [ ] Severe

30. Do you feel neck pain when you use Phone, iPad, Tablet or Laptop

- [ ] Non
- [ ] Mild
- [ ] Moderate
- [ ] Severe
31. Do you feel shoulder pain when you use Phone, iPad, Tablet or Laptop
   □ Non
   □ Mild
   □ Moderate
   □ Severe

32. Do you feel wrist pain when you use Phone, iPad, Tablet or Laptop
   □ Non
   □ Mild
   □ Moderate
   □ Severe

33. Do you feel headache after you use Phone, iPad, Tablet or Laptop
   □ Non
   □ Mild
   □ Moderate
   □ Severe

34. Have you taken treatment for any condition mentioned above during the last 6 months
   □ Yes
   □ No

Documents available
Documents unavailable
Table 3.4.1; Table for Determining sample size for a given population

<table>
<thead>
<tr>
<th>( N )</th>
<th>( S )</th>
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Note: \( N \) is population size. \( S \) is sample size.

Source: Krejcie & Morgan, 1970