Association between parental smart phone addiction and child behavioural problems

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Abstract

Background: Smart phone devices have become a potentially addictive behaviour. Parental smart phone addiction may probably have far reaching consequences on the behaviour of children.

Objectives: To study the association between parental smart phone addiction and behavioural problems in children.

Method: The study involved 500 children aged 2-12 years and their parents visiting the outpatient department (new and follow up cases) of a tertiary care hospital in Durgapur after receiving institutional ethical committee clearance. "Smart phone compulsion test" was given to each parent to enquire about smart phone usage practices after taking informed consent. The parents were also asked to fill in the Paediatric Symptom Checklist-17 to know about behavioural problems of their children. Each responded questionnaire was assigned a specific serial number. Data from matched sets of questionnaires as per serial number were analysed using Chi-square test. $p<0.05$ was taken as significant. Odds Ratios (OR) and Relative Risks (RR) were also computed.

Results: Smart phone addiction in parents was significantly associated with overall behavioural problems ($p<0.001$), internalization ($p<0.001$) and externalization ($p<0.001$) in children. No significant association was seen with attention problems. Computed values of RR and OR were also indicative of the same.

Conclusions: Smart phone addiction in parents was significantly associated with behavioural problems in children.

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(Key words: Behavioural problems, externalization, internalization, smart phone addiction)

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Introduction

An association between internet and psychological health problems in children has been documented in some studies[1-5]. China, India and USA are the leading users of smart phones, each having more than 100 million users[6]. Whilst Internet was the initial technological addiction, smart phone has become a source of potential addiction[7,8]. Studies suggest that smart phone overuse can lead to addictive and dependency feelings[9,10], dangerous use when driving[11,12], and use in prohibited areas like libraries, classrooms or public transport[13]. Mobile phone overuse is also associated with more psycho-pathological symptoms, like depression and anxiety[14]. Mental health, healthy habits and cell-phone addiction are inversely related[15]. Mobile phones can interfere with human relationships[16].

Recently, western literature has been emphasizing on the impact of parental smart phone addiction on children. This can lead to 'little ones' feeling snubbed by the devices and consequently act out[17]. The more parents show addiction to smart phones, the more difficulty they have to regulate their children's use of the devices[18]. Various other studies reflect the ill effects of parental smart phone addiction on the wellbeing of children[19-22]. There are about 450 million smart phone users in India[23]. Smart phones provide us with a nearly endless supply of positive and negative social stimuli. Studies have shown that positive social stimuli cause a dopamine release which is probably responsible for addiction. These responses are not very unlike cocaine addiction[24]. De-addiction centres for smartphones and internet will be commonplace in the near future[25,26]. But even with such a large number of smart phone users and their potential for addiction, studies on effect of parental smart phone addiction on children in India are scarce. With the above background, we proceeded with this study.

Objectives

To study the association between parental smart phone addiction and behavioural problems in children.

Method

A prospective study was carried out from March 2019 to March 2020, a one year period. All children of age group 2-12 years attending the paediatric outpatient department (new and follow up cases) in a tertiary hospital were included in this study. Children with pre-existing behavioural problems (those children already attending development clinic and special education clinic in our hospital) were excluded. Informed consent was taken. "Smart phone compulsion test" was self-administered by the parents to enquire about smart phone usage practices[27]. The parents were also asked to fill in Paediatric Symptom Checklist-17 (PSC-17) to know about behavioural problems of their children[28]. The PSC-17 consists of 17 items that are rated as "Never", "Sometimes", or "Often" present. A value of 0 is assigned to "Never", 1 to "Sometimes", and 2 to "Often". The total score is calculated by adding together the score for each of the 17 items. Items that are left blank are simply ignored (i.e. score equals 0). If four or more items are left blank, the questionnaire is considered invalid. The responses of PSC-17 are further subdivided into externalizing problems, internalizing problems and attention problems. Externalizing problems are problem behaviours that are directed toward the external environment. They include physical aggression, disobeying rules, cheating, stealing, and destruction of property. Internalizing behaviours are negative behaviours that are focused inward. They include fearfulness, social withdrawal, and somatic complaints. A PSC-17 score of 15 or higher suggests the presence of significant behavioural or emotional problems. Both questionnaires were in English as all the parents in the study population understood the language. Each responded questionnaire was assigned a specific serial number.

Ethical issues: Ethical clearance was obtained from the Institutional Ethical Committee of I Q City Medical College and Hospital, Durgapur, West Bengal, India (NIQMC/IEC/LTR/18/02/28). Written informed consent was obtained from the parents of the participants.

***Statistical analysis*:** The data from matched sets of questionnaires as per serial number were analysed using Chi-square test. $p<0.05$ was taken as significant.

Results

Following the standard procedure, a smart phone compulsion test score of 8 or more was considered addiction for an adult. A child with a score of 5 or more in I is considered facing internalization problem; a score 7 or more in each A and E indicates attention and externalization problem, and an overall score of 15 or more overall behavioural problems. Out of 500 parents, 138 (27.6%) were found to be addicted to their smart phones, and 14% of the children had behavioural problems. Out of 138 addicted parents, 30 (21.7%) reported internalization problems faced by their children, whereas for non-addicted parents, the figure was about 7%. It may be seen that addicted parents have a risk of about 22% of their children having internalization problems, whereas the risk is about 7% for non-addicted parents, the relative risk comes to 3.02. An odds ratio of 3.59 shows that addicted parents are 3.59 times more likely to have their children with internalization problem, than the non-addicted parents. Smart phone addiction in parents was significantly associated with their children facing internalization problems ($p<0.001$) [Table 1].

No significant association was seen with attention problems [Table 2], but, relative risk was more than 1.

Association was also observed with externalization ($p<0.001$), relative risk being 3.54 [Table 3].

Table 1

Association between parental smartphone compulsion score and PSC-17 internalization score of children

Internalization score	Smartphone compulsion score		
	High *(n=138)* **n (%)**	**Low *(n=362)*** **n (%)**	**Total *(n=500)*** **n (%)**
High *(n=56)*	30 (21.74)	23 (07.18)	56 (11.20)
Low *(n=444)*	108 (78.26)	336 (92.82)	444 (88.80)
p value for Chi-square	< 0.001		
Odds Ratio	3.59		
Risk of child having internalization problems for addicted parents			21.74 %
Risk of child having internalization problems for non-addicted parents			07.18 %
Relative Risk =			3.02

Table 2

Association between parental smartphone compulsion score and PSC-17 attention problem score in children

Attention problem score	Smartphone compulsion score		
	High *(n=138)* **n (%)**	**Low *(n=362)*** **n (%)**	**Total *(n=500)*** **n (%)**
High *(n=10)*	04 (02.90)	06 (01.66)	10 (2.00)
Low *(n=490)*	134 (97.10)	356 (98.34)	490 (98.00)
p value for Fisher Exact Test	0.474		
Odds Ratio	1.77		
Risk of child having attention problems for addicted parents			2.90 %
Risk of child having attention problems for non-addicted parents			1.66 %
Relative Risk =			1.75

Note: One cell frequency was less than 5, Chi-square test was not used. So Fisher Exact Test was used.

Table 3

Association between parental smartphone compulsion score and PSC-17 externalization score in children

Externalization problem score	Smartphone compulsion score		
	High *(n=138)* **n (%)**	**Low *(n=362)*** **n (%)**	**Total *(n=500)*** **n (%)**
High *(n=50)*	28 (20.29)	22 (06.08)	50 (10.00)
Low *(n=450)*	110 (79.71)	340 (93.92)	450 (90.00)
p value for Chi-square	< 0.001		
Odds Ratio	3.93		
Risk of child having externalization problems for addicted parents			20.29 %
Risk of child having externalization problems for non-addicted parents			06.08 %
Relative Risk =			3.54

It may be seen that addicted parents have a risk as high as 35 percent of their children having overall behavioural problems, with a relative risk of 5.48 and a high odds ratio of 7.86. It is rather frightening that addicted parents (in comparison with non-addicted parents) are about eight times more likely to have their children with overall behavioural problems. Strong statistical association is observed between smart-phone addiction in parents and overall problems of children ($p<0.001$) [Table 4].

Table 4

Association between parental smartphone compulsion score and PSC-17 overall behavioural problem in children

Overall behavioural problem score	Smartphone compulsion score		
	High *(n=138)* **n (%)**	**Low *(n=362)*** **n (%)**	**Total *(n=500)*** **n (%)**
High *(n=50)*	48 (34.78)	23 (6.35)	71 (14.20)
Low *(n=450)*	90 (65.22)	339 (93.65)	429 (85.80)
p value for Chi-square	< 0.001		
Odds Ratio	7.86		
Risk of child having overall behavioural problems for addicted parents			34.78 %
Risk of child having overall behavioural problems for non-addicted parents			06.35 %
Relative Risk =			5.48

Discussion

The study highlights that 27.6% of the parents in the study were addicted to their smart phones. This is more than three times higher than the smartphone addiction levels in Korean adults (8.1%)[29]. The cheaper cost of smart phones and data plans probably leads to easier access to smartphones, while lack of awareness about the ill effects may explain higher addiction in Indian adults as compared to their Korean counterparts. Fourteen percent of the children included in the study had behavioural problems. This was lower than the 22.7% reported in a study by Gupta *et al* probably because of the inclusion of an older age group of 6-18 years in their study[30].

Smart phone addiction in parents was significantly associated with overall behavioural problems, internalization and externalization in children. Although western literature exists about smart phones causing parental distraction in presence of their children[22,31], no such Indian study is available.

Smart phones probably prevent the parents from providing meaningful emotional support to their children which causes their children to throw tantrums or sulk, which only add to the parents' stress leading to more withdrawal with technology, and the cycle continues[32].

The strength of the study is reflected by the strong association between parental smartphone addiction and behavioural problems in children in a fairly cosmopolitan population that may be reflective of the society in general. Inability to account for confounding factors such as mental health issues, familial discord, socioeconomic factors etc. for both parental smartphone addiction and behavioural problems in children is a major shortcoming of the study.

It is recommended that parents give uninterrupted attention to the children and limit the use of smartphones in their presence. Enquiry of parental smartphone use should be made a part of regular history taking for behavioural problems in children. If smart phone addiction is suspected, they should be counseled as this problem is similar to substance abuse, with repercussions not only on self but also on the children. Impact of parental smartphone addiction on children's behaviour should be discussed on medical platforms to find effective measures. Mass media should propagate the importance of this upcoming problem.

Conclusions

Smart phone addiction in parents was significantly associated with behavioural problems in children.

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