

## Original Research Article

# Attitudes and practices of medical students regarding video-games: should community medicine educationists get serious about serious games

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## ABSTRACT

**Background:** Present medicos belong to a generation called 'Millennials' or 'Net Generation'. They spend less time reading, and are more comfortable in image-rich environments provided by New Media. The objective of the study is to identify knowledge, attitudes and practices of medical students regarding video-games, with the aim of prompting community medicine teachers to consider serious games as a teaching-learning tool.

**Methods:** The study was conducted among undergraduate medical students who self-administered a structured questionnaire eliciting their practices and attitudes regarding video-games, perceptions regarding impact of video-gaming on their academic performances and acceptability of serious games as a learning tool in community medicine.

**Results:** A total of 255 medical students participated in the study, out of which 242 (94.9%) were current video-gamers. The students started playing video-games at a mean age of  $11.72 \pm 3.63$  years. Mobile phones were the commonest platform for video-gaming. The median duration of video-gaming was 150 minutes/week, with semi-inter-quartile range of 255 minutes. 57.4% of students reported that video-games helped them relax, while 26% felt that video-gaming increased their skills. The study revealed that 43.6% students were aware of serious games and 22.7% had used them as a learning tool in last three months. Moreover, about 95% of medicos welcomed learning of community medicine through serious games.

**Conclusions:** The study reveals that contemporary medical students are spending considerable time playing video-games. It also shows that the learner is willing to learn community medicine through serious games. The study prompts community medicine educationists to consider serious games as a teaching-learning tool.

**Keywords:** Attitudes, Medical students, New media, Practices, Serious games, Video games

## INTRODUCTION

Present medical students belong to a generational cohort called 'Millennials' or the 'Net Generation'.<sup>1</sup> They are more comfortable with the *New Media* (NM) as they share their growth with development of the internet. They often have high degree of technological literacy, and enjoy learning through discovery, by experiencing and experimenting with it. As compared to medical students

of two decades ago, the present medicos spend less time reading, and are more comfortable in image-rich environments than with text.<sup>2</sup> They prefer active, first person, experiential learning and a level of interactivity that is lacking in conventional teaching methods, but present in new media technologies.<sup>3</sup> Thus, the increasing use of NM and *Serious Games* (SG) in medical education suit millennial medical students' learning styles.<sup>4</sup> NM is defined as products and services that provide information

or entertainment using computers or the internet, and not by traditional methods such as television and newspaper. Friedman et al suggested that teachers should utilize NM for educating digitally savvy learners.<sup>5</sup> Holtzinger et al analyzed several contemporary computer games belonging to different genres and concluded that video-games incorporated learning principles that were in consonance with accepted principles of learning.<sup>6</sup>

The idea of using video-games for *purposes other than fun* was first formalized by Clark C Abt<sup>7</sup> who in his book defined SG as, "Games having an explicit and careful thought-out educational purpose and not intended to be played primarily for amusement." SG can provide the sort of deep, epistemic learning that traditional teaching techniques may lack.

Academic leadership calls for innovative methods to enhance ways that would help medical students access the concepts that they have to learn to become doctors. SG and other NM technologies developed by the video game industry hold great promise of helping educators to meet this critical mandate.<sup>4</sup> Systematic reviews undertaken in recent years in developed countries have evaluated the utility of serious games for medical education.<sup>8,9</sup>

However, most of these games were related to team training in critical care and triage, and to assist develop psychomotor surgical skills. The authors did not find any research on medical students' attitudes and practices regarding video-gaming in India, or studies regarding the role of SG in learning Community Medicine (CM). Such data is academically relevant as these provide inputs to discuss whether CM educationists should consider developing SG as a tool for teaching-learning in medical schools.

The present study attempts to bring out the practices of medical students towards video-gaming, its impact on their academic performance and their attitudes towards video-games as an educational tool in CM.

## METHODS

### *Study settings*

A medical college in South India.

### *Study design*

Cross sectional design.

### *Survey instrument*

A pilot-tested structured questionnaire with questions on demographics and four major domains, namely (a) game-

play experience (b) attitudes about game-play (c) responders perception regarding impact of video-game-play on his learning process and (d) attitudes about the use of new media technology in teaching of CM.

### *Data collection*

Data collection involved self-administration of questionnaire in a group scenario, assuring confidentiality.

### *Data analysis*

Summary statistics were calculated for all variables and results are presented as percentages. The data has been tabulated gender-wise and differences between genders have been identified using Chi-square test.

### *Ethical considerations*

Approval of Institution Ethics Committee and written informed consent from the participants were obtained. Confidentiality was assured and ensured.

## RESULTS

A total of 255 medical students participated in the study, out of which 242 (94.9%) were current video-gamers. Table 1 depicts the profile of these students. The Table is self-explanatory.

The knowledge, attitude and practices of the undergraduate medical students regarding video-games are tabulated in Table 2. The students started playing video-games at the mean age of  $11.72 \pm 3.63$  years. Mobile phones were the commonest platform for video-gaming, although 16.9% students were also playing on play-consoles. The median duration of video-gaming per week was 150 minutes with semi-inter-quartile range of 255 minutes. The boys were spending more time video-gaming than girls and the difference was statistically significant ( $p < 0.05$ ). A large proportion (57.4%) of students reported that video-games helped them relax, while 26% also felt that video-gaming increased their skills.

Table 3 highlights the impact of video-gaming as perceived by the students. As evident from the table, video-games are now culturally accepted, and 93.8% of students did not feel any remorse playing video-games, inspite of 20.2% of students video-gaming during academic sessions. Missing academic sessions (lectures/ clinical postings/ tutorials) because of video-games was significantly higher among boys than girls ( $p < 0.001$ ).

The practices and attitude of video-gamers towards medical-related SG are projected in Table 4.

**Table 1: Demographic profile of students (n=242).**

Characteristics	Group	Boys (n = 102)	Girls (n = 140)	Total (%)	p value
Age	≤20	65	98	163 (67.4)	> 0.05
	> 20	37	42	79 (32.6)	
Type of Admission	Merit quota	64	75	139 (57.4)	> 0.05
	Management/NRI quota	38	65	103 (42.6)	
Place of Stay	Hostel	75	136	211 (87.2)	< 0.001*
	Rented accommodation	27	4	31 (12.8)	

\*Statistically Significant

**Table 2: KAP of the video-gamers.**

Characteristics/ Question	Grouping	Boys (n=102)	Girls (n=140)	Total (%)	p value
Life-period at which started playing video-games	Childhood (≤11)	45	62	107 (44.2)	> 0.05
	Adolescence (>11-19)	57	78	137 (55.8)	
Platform used for playing video-games (Total exceeds n and 100% because of multiple-responses)	Mobile phone	102	140	242(100)	Not analyzed (multiple responses)
	Tablets	27	21	48 (19.8)	
	Laptops	36	59	95 (39.3)	
	Play-console	24	17	41(16.9)	
Average duration of Video-games played per week (hours)	< 7	64	105	169 (69.8)	< 0.05*
	8-14	24	29	53 (21.9)	
	> 14	14	6	20 (8.3)	
Have time spent playing video-games changed since joined medical college?	Increased	33	32	65(26.8)	> 0.05
	Decreased	45	74	119 (49.2)	
	No change	24	34	58 (24.0)	
Reasons for playing (Total exceeds n and 100% because of multiple responses)	Helps relaxing/ avoid loneliness/ decrease hostility	63	76	139 (57.4)	Not analyzed (multiple responses)
	Fun time with friends/ helps develop new friendship	33	50	83 (34.3)	
	Improves skills	27	36	63 (26.0)	

\*Statistically significant.

**Table 3: Impact (subjective) of video-games.**

Question	Grouping	Boys (n=102)	Girls (n=140)	Total (%)	p value
Do you feel guilty playing video-games?	Yes	7	8	15 (6.2)	> 0.05
	No	95	132	227 (93.8)	
Do you feel that spending less time video-gaming will improve your academic results?	Yes	14	9	23(9.5)	> 0.05
	No	57	94	151	
	Do not know	31	37	68	
Do you play during academic activities?	Yes	26	23	49 (20.2)	> 0.05
	No	76	117	193 (79.8)	
Do you miss academic activities because of video-games?	Yes	27	5	32 (13.2)	< 0.001*
	No	75	135	210 (86.8)	

The study revealed that 57.4% students were unaware of availability of medical SG, and less than one in four (22.7%) had played such games in last three months.

However, about 95% of medicos welcomed learning of CM through SM (Table 4).

## DISCUSSION

The study reveals that 94.9% of undergraduate medical students are video-gaming. It also shows that video-gaming has become a way of life and is initiated either during childhood (44.2%) or adolescence (54.8%) with mean age of 11.72±3.63 years. In a study conducted among medical students in US the mean age of starting video-game play was 9.4±3.4 years.<sup>4</sup> Present study reveals that medical students perceive video-gaming as a means of relaxation (57.4%), socialization (34.3%), and a tool to develop skills (26%).

Even though s(he) spends an average of two and half hour per week (range 15 min to 35 hours/week) playing video-games, plays in classrooms (20.2%), only 9.5% feel that video-gaming adversely affect their academic progress.

Thus, the study quantifies what the faculty in medical schools in India generally believes i.e. contemporary medical students of both genders and all social status (merit as well as management quota entry) are comfortable and confident video-gamer, and spend considerable time playing video-games.

**Table 4: KAP regarding learning through video-games.**

Question	Grouping	Male (n=102)	Female (n=140)	Total (%)	p value
Do you know there are medicine-related application in NM	Yes	51	52	103 (42.6)	< 0.05*
	No	51	88	139 (57.4)	
Have you participated in medicine-related NM activity any time during last 3 months	Yes	29	26	55 (22.7)	> 0.05
	No	73	114	187 (77.3)	
Do you think that Community Medicine related video-games can help in your academic learning	Yes, great idea	39	50	89 (36.8)	> 0.05
	Yes, worth a try	59	82	141 (58.3)	
	No, will not help	4	8	12 (4.9)	

\*Statistically significant.

On a positive note from academic point of view, medicos (94.9%) welcome CM-related SG as a teaching-learning tool, although the proportion of those who have already experimented with any medicine-related NM technology is presently low (22.7%). This finding is in consonance with findings of a study conducted in US that also reported 95% of medical students liked the idea of using new media technology in medical education.<sup>4</sup>

## CONCLUSION

The study results should prompt CM educationists to consider SM as a teaching-learning tool. Development of serious games that are content and culturally specific to public health challenges in India, however, will need a close and protracted co-operation among the teacher, the taught and the gaming-industry.

The authors feel that with a large clientele base, the industry jumping on the bandwagon may be a lesser issue than us, the teachers seriously evaluating serious games as teaching-learning tool for education of CM in medical schools.

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