



# A Study on Binge Watching and Its Association with Sleep Pattern - A Cross Sectional Study among Medical College Students in Kancheepuram District, Tamil Nadu

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## ABSTRACT

**Background:** Binge-watching is a phenomenon of recent interest, as many people all over the world have started watching a lot web-series and movies in Over the Top (OTT) platforms. By definition, binge watching is watching 3 to 6 episodes continuously without any breaks without any feeling of guilt associated with it. Binge-watching can lead to sedentary lifestyle and create problems in personal relationships, causing people to procrastinate important things in their professional/work life, reduced sleep time, insomnia and weight gain.

**Methodology:** This is a cross sectional study among 391 medical college students in an urban area kancheepuram selected by Simple random sampling. Data collection was done using a semi structured questionnaire and Pittsburg sleep quality index scale.

**Results:** The prevalence of binge watching was 63.3% among OTT users. Among the different components in PQSI Scale, it was found that subjective sleep quality, sleep latency, habitual sleep efficiency and daytime dysfunction had statistical significance association with binge-watching.

**Conclusion:** Most people watching TV shows are unaware that they binge watch and it can have some lasting impacts on their sleep and quality of life. To prevent cognitive arousal, before going to sleep, practices like meditation and relaxation techniques can be followed.

**Key words:** Binge watching, over the top application, sleep quality

## INTRODUCTION

Binge watching is a phenomenon of recent interest, as many people all over the world have started watching a lot web-series and movies in Over the Top (OTT) platforms. By definition, binge watching is defined as watching 3 to 6 episodes continuously without any breaks without any feeling of guilt associated with it.<sup>1</sup> Another definition defines binge watching as watching 3 to 4 hours of Television (TV) content continuously in a single setting.<sup>2</sup> As lot of new OTT platforms have emerged over the past few years, and the Coronavirus Pandemic making people stay in their homes, people have begun to stream

web-series and movies digitally which has caused binge watching to become the new norm in recent times.<sup>1</sup> The major OTT platforms include Netflix, Amazon Prime, Crunchyroll, Apple TV and region specific OTT like Sun Next, Zee5, Hotstar+ and Sonly-Liv.<sup>3</sup> The major advantage of OTT platforms is that, all the episodes of TV series are available all at once and the viewer need not wait till the next week to know what happened in the following episodes which lead to continuous streaming of the episodes.<sup>3</sup>

In United States, based on the Omnibus survey organised by YouGov, around 58% of the Americans binge watched.<sup>4</sup> In India, based on survey results re-

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leased by Data Sciences division of Dentsu Aegis Network (DAN), found that binge watching is on the rise in India with around 49% of the youth binge watch 3 to 4 hours a day binge watching content and 4 hours is the average amount of time spent by millennials per day.<sup>5</sup> Recent evidence suggests that binge watching can become similar like similar types of addiction like videogames, online gaming and internet usage and can also lead to substance abuse disorders in the long run.<sup>6,7</sup>

Binge watching can lead to sedentary lifestyle and create problems in personal relationships, causing people to procrastinate important things in their professional/work life, reduced sleep time, insomnia weight gain and increased junk food consumption.<sup>8-11</sup> Evidence suggests that binge watching can sacrifice some part of viewer's life and become the main source of entertainment in their lives.<sup>12</sup> Excessive binge watching can lead to reduced sleep hours leading to fatigue and reduced work efficiency in their school/college life.<sup>10</sup> This shows that cognitive pre-sleep arousal plays an important role in the above mentioned relationship. Contrary to some research findings, binge watching is not associated with sleep quality or quantity.<sup>13</sup> Sleep is an important predictor which can negatively affect one's quality of life if it's not adequate.<sup>12</sup> Further research is necessary to find relationship between binge watching and sleep.

Based on the above background, the study was done with the major objective to find out the prevalence of binge watching and its association with sleep quality among medical college students residing in an urban area of Kancheepuram district, Tamil Nadu.

## METHODOLOGY

The study was done among the medical students studying in medical college in an urban area of Kancheepuram district, Tamil Nadu.

**Sample Size Calculation:** Based on the study done in India by DAN, the prevalence of binge watching was found to be 49%.<sup>5</sup> Using this as Prevalence (P) and applying it in the formula  $4PQ/L^2$ , with allowable error of 11% of P, the required sample size was found out to be 344. Accounting for 10% for non-response rate, the required sample size was rounded off to 391.

**Sampling method:** A mail was sent to all the students of private medical college to consent their willingness to participate in binge watching study. Each year of study had 250 study participants. On the prefixed date and time, a total of 634 students turned up for the study. By simple random sampling, the questionnaire was sent randomly to 391 of the study participants selected by computer generated random numbers. Thereby, a total of 391 students participated in the study.

**Data Collection:** A pretested semi structured questionnaire was used to collect data regarding socio-

demographic details and details regarding binge watching among the study participants.

Sleep quality was assessed using Pittsburgh Sleep Quality Index (PQSI) to assess sleep quality among the study population. It is a validated instrument to assess sleep disturbances and sleep quality over a period of past 1 month. It consists of 19 items which generates scores over 7 components. This includes subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. The sum of scores for these seven components yields one global score which is termed as Global PQSI score. Higher the score poorer the sleep quality and lower scores indicate good sleep quality.<sup>14</sup>

**Data analysis:** Data was entered in Microsoft Excel and analysed by using SPSS version 22. Descriptive statistics were used in the presentation of data in the form of graphs and tables. In order to assess the relationship between sleep quality and binge watching, analytical statistics like Chi-square was used.

**Ethical Approval and informed Consent:** Informed consent was obtained from each study participant before including them in the study. Ethical approval was obtained from the Institutional ethical committee of the private medical college before commencement of the study.

## RESULTS

Around 60.6% of the study participants were females and 39.4% were found to be males. Most of the study participants (31.2%) were found to be from 2<sup>nd</sup> year MBBS followed by 3<sup>rd</sup> year MBBS (27.5%) and 4<sup>th</sup> year MBBS (23%). (Table 1)

### Prevalence of OTT Usage and Binge Watching among OTT users:

It was found that 278 (71%) of the study participants watch web series in OTT platforms. Among them 176 of the participants were found to binge watch. Thus prevalence of binge watching was found to be 63.3% among OTT users.

The prevalence of binge watching was found to be more among females (68.6%) when compared with males (56.3%).

**Table 1: Socio-Demographic characteristics of the study participants:**

Variable	Frequency (%)
<b>Gender</b>	
Male	154 (39.4)
Female	237 (60.6)
<b>Year of Study</b>	
1 <sup>st</sup> Year MBBS	72 (18.5)
2 <sup>nd</sup> Year MBBS	122 (31.2)
3 <sup>rd</sup> Year MBBS	107 (27.5)
4 <sup>th</sup> Year MBBS	90 (23)

**Table 2: Association between Binge watching and related variables:**

Variable	Binge Watching (n= 176) (%)	Total (n = 278)	Chi-Square	P-Value
<b>Gender</b>				
Female	109 (68.6)	159	4.398	0.036*
Male	67 (56.3)	119		
<b>Number of web series currently watching</b>				
Only one	94 (54.3)	173	15.88	0.00*
More than one	82 (78.1)	105		
<b>Watching web-series more than once</b>				
Yes	102 (81.6)	125	32.33	0.000*
No	74 (48.4)	153		
<b>Watched web series during class hours</b>				
Yes	36 (92.3)	39	16.42	0.000*
No	140 (58.6)	239		
<b>Compulsiveness to watch web series continuously</b>				
Yes	93 (86.1)	108	39.53	0.000*
No	83 (48.8)	170		
<b>Watching web-series throughout the night</b>				
Yes	101 (89.4)	113	55.77	0.000*
No	75 (45.5)	165		
<b>Watery/Burning eyes due to watching web series</b>				
Yes	85 (85.9)	99	33.65	0.000*
No	91 (50.8)	179		
<b>Academic performance got affected due to watching web series</b>				
Yes	82 (80.4)	102	20.24	0.000*
No	94 (53.4)	176		
<b>Sleep Quality (PQSI)</b>				
Poor Sleep Quality	123 (72.4)	108	15.4	0.000*
Good Sleep Quality	53 (49.1)	170		

\*P<0.05, statistically significant at 95% Confidence Interval

Among those who binge watch web series, around 78% watch more than one web series, 58.6% watch even during class hours, 86% had a compulsiveness to watch web series continuously and 72% suffer from poor sleep quality due to binge watching. The major factors which had a statistically significant association ( $P<0.05$ ) with binge watching were found to be gender, watching more than one web series and continuous watching, having compulsiveness to watch web series and even throughout the night and those having poor sleep quality. The mean PQSI score was found to be  $5.78\pm 3.32$ . The range was 17. (Table 2)

Around 81% of those who binge watch were found to have poor sleep quality and 86.7% of binge watchers found it severely difficult to fall asleep after going to bed (Sleep Latency). It was found that 80% of those who binge watch slept less than five hours. Around 88% suffered from daytime dysfunction due to binge watching. Among the different components in PQSI Scale, it was found that subjective sleep quality, sleep latency, habitual sleep efficiency and daytime dysfunction were found to have statistically significant association with binge watching. (Table 3)

## DISCUSSION

Binge watching web-series on OTT platforms is one the rise. This can in turn negatively impact a psychosocial wellbeing of the individuals if it impacts their quality of sleep. The study among medical students to study about binge watching is discussed below.

The prevalence of binge watching among the OTT users was found to be 63% in the present study. The findings are higher than the nationwide survey conducted by DAN which found 49% as prevalence of binge watching. Even in United States the prevalence was found to be 43%. In a study done by Rahul A in India, around 80% of the study participants watched 1 to 2 hours per day and 17% watched 3 to 4 hours a day of web-series content.<sup>15</sup> In a study done by Dixit A, the prevalence of binge watching was found to be 68%.<sup>16</sup> This high prevalence of binge watching is a cause of concern as it can lead to other psychosocial problems among the individuals.<sup>17</sup>

This study found that, 80% of those who binge watched TV shows, have their academic performance affected due to their pattern of binge watching. Similar results were obtained in a study done by Rahul A et al in India.<sup>15</sup> This can have a detrimental effect on their scholastic performance which can affect their personal and academic life and relationship with family members.

Regarding sleep quality, it was found that, 72% of the study participants who binge watched TV shows, suffered from poor sleep quality according to the PQSI scale. In a study done by Exelmens L et al, 32% of those who suffered from poor sleep quality were binge viewers.<sup>10</sup> This discrepancy may have been due to the difference in binge watching between individuals with different sociodemographic characteristics.

**Table 3: Association between Binge watching and sleep related variables (PQSI Scale)**

Components of PQSI Scale	Binge Watching (n = 278)		Chi-Square	P-Value
	Yes (%)	No (%)		
<b>Subjective Sleep Quality</b>				
Very Good	30 (54.5)	25 (45.5)	4.737	0.192
Fairly Good	108 (64.3)	60 (35.7)		
Fairly Bad	21 (61.8)	13 (18.2)		
Very Bad	17 (81)	4 (19)		
<b>Sleep Latency</b>				
No difficulty	59 (65.6)	31 (34.4)	10.219	0.017*
Mild Difficulty	59 (60.2)	39 (39.8)		
Moderate Difficulty	32 (53.3)	28 (46.7)		
Severe difficulty	26 (86.7)	4 (13.3)		
<b>Sleep Duration</b>				
> 7 hours	53 (52.5)	48 (47.5)	14.712	0.002*
6-7 hours	34 (56.6)	26 (43.3)		
5-6 hours	65 (74.7)	22 (25.3)		
< 5 hours	24 (80)	6 (20)		
<b>Habitual Sleep efficiency</b>				
> 85%	101 (56.4)	78 (43.6)	10.818	0.013*
75-84%	38 (73.1)	14 (26.9)		
65-74%	29 (80.6)	7 (19.4)		
<65%	8 (72.7)	3 (27.3)		
<b>Sleep disturbances</b>				
No difficulty	20 (62.5)	12 (37.5)	0.791	0.852
Mild Difficulty	125 (62.2)	76 (37.8)		
Moderate Difficulty	28 (68.3)	13 (31.7)		
Severe difficulty	3 (75)	1 (25)		
<b>Use of Sleeping medication</b>				
Not during the past month	157 (65.4)	83 (34.6)	6.868	0.049*
Less than once a week	7 (41.2)	10 (58.8)		
Once or twice a week	7 (46.7)	8 (53.3)		
Three or more times a week	5 (83.3)	1 (16.7)		
<b>Daytime dysfunction</b>				
No difficulty	54 (49.5)	55 (50.5)	15.56	0.001*
Mild Difficulty	78 (71.6)	31 (28.4)		
Moderate Difficulty	35 (70)	15 (30)		
Severe difficulty	8 (88.9)	1 (11.1)		

\*P<0.05, statistically significant at 95% Confidence Interval

A statistically significant association was found between binge watching and sleep related factors like sleep latency, habitual sleep efficiency and daytime dysfunction. A study done by Kroese FM found that binge watcher tends to procrastinate their sleep time which can lead to adverse health outcomes.<sup>9</sup> These findings suggest that, binge watching is associated with poor sleep quality, fatigue and insomnia.<sup>9</sup>

Various literature and studies done have found that watching television shows may not have as much effect on sleep as other factors like playing video-games, using internet etc.<sup>18</sup> The research gaps are challenging because binge watching as defined by an individual differs and there is no accepted definition for binge watching which poses a major challenge for future research. It is hypothesized that binge watching can lead to cognitive arousal before going to sleep which can cause disturbances in sleep pattern.<sup>10</sup> But it is still unknown if they watch calming T shows can cause the opposite.

## CONCLUSION

Most of people who watch TV shows are unaware that they binge watch and it can have some lasting

impacts on their sleep and quality of life. In order to prevent cognitive arousal before going to sleep, practices like meditation and relaxation techniques like deep breathing exercises to calm the mind can be practiced by individuals who tend to binge watch often. Awareness need to be created among individuals to restrict their TV shows to safe limits per day.

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