



Turn on the screen, turn off the loneliness – analysis of risk factors for binge-watching among Polish medical and non-medical students. A web-based cross-sectional study

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Abstract

Objective. The aim of the study was to determine the risk factors for binge-watching (BW) among Polish medical and non-medical students.

Materials and Method. A STROBE-compliant cross-sectional observational study, was carried out in Poland from July 2022 – March 2023. The web-based survey consisted of a personal questionnaire, a Binge-Watching Behaviour Questionnaire, a Scale of Motivation for Watching TV Series, a shortened version of the Ryff Well-Being Scale, and the De Jong Gierveld Loneliness Scale. Inclusion criteria were being a student and providing informed consent to participate. The study involved 726 respondents (70.5% female) with an average age of 22.41 (SD=3.89), including 308 (44%) medical students.

Results. In the group of Polish medical students, the regression model was well-fitted $F(10,287)=30.189$; $p<0.001$, $R^2=0.496$, and the risk factors were escape motivation ($\beta=0.416$; $p<0.001$), psychological well-being ($\beta=-0.165$; $p=0.003$), emotional loneliness ($\beta=0.152$; $p=0.014$), and social loneliness ($\beta=-0.118$; $p=0.031$). Among Polish students of other majors, the regression model was well-fitted $F(10,378)=46.188$; $p<0.001$, $R^2=0.538$, and the influence of escape motivation ($\beta=0.456$; $p<0.001$), entertainment motivation ($\beta=0.258$; $p<0.001$), the psychological well-being of students ($\beta=-0.134$; $p=0.004$), and emotional loneliness ($\beta=0.111$; $p=0.032$) was demonstrated.

Conclusions. Students are in a high-risk group for behavioural addiction known as binge-watching. Emotional loneliness, the desire to escape from everyday life problems, and reduced psychological well-being intensified binge-watching in all the studied groups. Entertainment motivation and social loneliness differentiated the groups of Polish medical and non-medical students in terms of BW risk factors.

Key words

behavioural addiction, social loneliness, motivation, mental well-being, binge-watching, emotional loneliness

INTRODUCTION

Recently, there has been a significant increase in interest in the series available on streaming platforms, especially among students [1]. This has resulted in the development of a pattern of behaviour called binge-watching (BW). This concept was introduced by NETFLIX in 2013 and means watching at least two episodes of a TV series during a single session [2]. At first, it was described as a way for young people to spend time. However, over time it began to increasingly resemble a behavioural addiction [3]. According to the ICD-11, another specified addictive behaviour disorder (code 6C5Y) is characterized by a persistent pattern of intense behaviour,

observed for at least 12 months, in which the person prioritises that activity over other activities and responsibilities, and continues to do so despite negative consequences. He or she has difficulty controlling the behaviour which ultimately leads to impaired functioning in family, social or work life [4]. Binge-watching can lead to similar consequences and is associated not only with many psychological and social problems, but also physical health problems [5, 6].

Along with the course of the COVID-19 pandemic, there has been an increase in the frequency of people engaging in BW [7]. This is mainly linked to the pandemic-related restrictions imposed on society, such as the need for isolation or lockdown. During the pandemic, society had significantly reduced opportunities to satisfy psychological needs and binge-watching became one of the few leisure activities still available [8, 9]. Research to-date suggests that the pandemic was a significant trigger and exacerbator of BW, but there may be other reasons why young people fell into loops of

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addiction and escape from reality. Available meta-analyses indicate a link between compulsive viewing of TV series and mental health problems (depression, anxiety, insomnia), as well as experiencing strong and difficult emotions, such as anger, anxiety, and especially loneliness [10]. Loneliness is a negative feeling that occurs when a person's social needs are not met by the quantity and quality of their relationships with other people [11, 12]. It affects people of all ages, from children to seniors. Everyone needs a relationship in which they feel safe, loved, and accepted. A distinction is made between emotional and social loneliness; the former refers to a lack of attachment together with a sense of isolation. Social loneliness, on the other hand, is the lack of a social network, i.e. the absence of a circle of people which allows an individual to develop a sense of belonging, companionship, or being part of a community. This was felt dramatically during the COVID-19 pandemic [13].

A problem that escalated as the pandemic continued was the loneliness also felt by students. Cross-sectional studies have shown that the experience of loneliness during the COVID-19 pandemic was associated with a number of risk factors, including – but not limited to – socio-demographics (e.g., younger age, female gender, student status). Studies indicate a significant increase in the rates of experiencing loneliness compared to pre-pandemic times [14–17]. Along with the discomfort experienced, young people are turning their attention towards watching TV series. On the one hand, BW can become one way of coping with loneliness, but also as research by Starosta et al [18] shows, the psychological conditions of binge-watching are also related to the way of spending free time, obtaining information, building relationships through watching together, as well as a way to escape from problems [18].

What is worrisome, however, is that BW can quickly devolve from a coping strategy which can easily become an addiction, especially because some studies confirm a link between binge-watching and loneliness [2]. This is also the case in which the relationship between these variables is not clear-cut [19, 20]. In the present study, attention is focused mainly on a group of medical students who, in Polish conditions, were the fastest to return to contact activities during the COVID-19 pandemic. According to the study, this group of students were one of the best at coping with emotional distress during the pandemic [21]. Medical students presented the lowest levels of depression, anxiety and stress, compared to students in the other disciplines studied. They were also less likely to use avoidant coping strategies compared to those in other fields of study [22].

OBJECTIVE

- 1) Analysis and identification of factors exacerbating binge-watching among Polish students during the COVID-19 pandemic.
- 2) To determine whether medical students differed from students in other disciplines in terms of risk factors for developing BW.

Based on the literature review and clinical observations, the following research questions emerged:

- 1) What factors significantly exacerbate binge-watching among university students?

- 2) Do Polish medical students who returned to contact activities the fastest during the COVID-19 pandemic, thus remaining socially isolated the shortest, differ from Polish students in other disciplines in terms of risk factors for developing BW?

The following research hypotheses were set:

- 1) The severity of BW among Polish students will be related to poorer psychological well-being, female gender affiliation, experienced emotional and social loneliness, and particular motivations, including especially escape, leisure, social and leisure motivations.
- 2) Medical students studying online for the shortest time will manifest increased compulsive viewing of TV series due to poorer psychological well-being, being of the female gender and motivated by entertainment, escape, and leisure activities. Due to contact with patients, staff and peers during education, factors related to loneliness are not expected to be important in this model.
- 3) Non-medical students studying since the beginning of the online pandemic, will present increased compulsive viewing of series due to lower psychological well-being, being of the female gender, entertainment and escape motivation related to leisure activities, and coping with experienced loneliness (emotional and social).

MATERIALS AND METHOD

Survey design. The study was cross-sectional, observational, and conducted from 19 July 2022 – 26 March 2023 in Poland using an anonymous online survey made available via the Google platform. The study protocol was approved by the Bioethics Committee in Lublin (No. KE-0254/146/06/22). At this stage, the project was reviewed for the proper protection of human dignity during the performance of the study, as well as the feasibility, validity, and correctness of the study protocol. A list of universities was compiled and an invitation to participate in the planned online survey was distributed via e-mails, and posts on social networking sites for student groups at Polish universities. The time taken to complete the survey was estimated to be approximately 15–20 minutes. The survey was conducted in accordance with national legislation and the Declaration of Helsinki. The manuscript was written in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) protocol [23].

Study group. A sampling calculator was used to determine the minimum representativeness of the sample [24]. First, based on the data of the Central Statistical Office in Poland on higher education, it was determined that in the academic year 2020 – 2021, there were 349 higher education institutions in Poland with 1215.3 thousand students (of which 58% were women) [25]. According to the sampling calculator, 664 participants met the requirements for minimum sample representativeness.

The inclusion criteria for subjects in the research study were student status and voluntary informed consent to participate.

A total of 764 students started filling in the questionnaire, of whom 726 (70.5% were female) aged between 18 – 50 years ($M=22.41$; $SD=3.89$) qualified for the final analysis. Six respondents did not agree to participate in the survey, and the

remaining 32 appeared not to have student status. Finally, a total of 308 (42.4%) medical students and 418 (57.6%) students from other fields of study took part in the survey.

The majority of respondents described their marital status as single (N=487; 67.1%) or being in an informal relationship (N=205; 28.2%). Only 3.7% (27 people) of the total group were married. The fewest were widowed and divorced (N=1; 0.1% each) and in a relationship other than the single individual mentioned (N=5; 0.7%). The largest number of respondents studied at medical faculties (N=308; 42.4%), and the least studied logistics and transport (N=2; 0.3%) (Figure 4). Table 1 shows the socio-demographic data.

Table 1. Personal data of the surveyed group of students

		Total	Women	Men
Total n (%)		726 (100%)	512 (70.5%)	214 (29.5%)
Age (M; SD)		22.41; 3.89	22.49; 4.21	22.21; 2.96
Marital status	Single	487 (67.1%)	332 (64.8%)	154 (72.3%)
	Informal relationship	205 (28.2%)	149 (29.1%)	56 (26.3%)
	Formal relationship	27 (3.7%)	25 (4.9%)	2 (0.9%)
	Other	7 (1%)	6 (1.02%)	1 (0.5%)
Field of study				
	Medical	308 (44%)	210 (68.2%)	98 (31.8%)
	Other than medical	418 (56%)	239 (72%)	93 (28%)

Description of method. An anonymous online survey was created in the form of a Google Forms document, which consisted of the following:

- 1) information on voluntary participation in the study and a consent form;
- 2) a demographic questionnaire containing questions on gender, age, marital status, student status and field of study;
- 3) an abbreviated version of the Psychological Well-Being Scales (PWB) Questionnaire by Carroll Ryff [26], in the Polish adaptation by Karaś & Ciecuch [27];
- 4) Binge-Watching Excessive Behaviour Questionnaire by Starosta, Izydorczyk and Lizińczyk [18];
- 5) Viewing Motivation Scale by Rubin [28] in the Polish adaptation by Starosta, Izydorczyk and Lizińczyk [18];
- 6) Loneliness Scales by De Jong-Gierveld [29], as adapted by Grygiel, Humenny, Rebisz, Switaj, & Sikorska [30].

Detailed description of the tools used.

1. Shortened version of the Psychological Well-Being Scales (PWB) [27]. The questionnaire consists of 18 questions to which the respondent provides answers according to a 5-point scale, where 1='I do not agree at all', 2='I do not agree', 3='I neither agree nor disagree', 4='I agree', and 5='I completely agree'. The results can be presented both as an overall score and as scores for individual subscales. These include the following:

- 1) Autonomy – independence in decision-making, a sense of influence over one's life;
- 2) Control over the environment – a sense of agency and the ability to transform the environment according to one's needs;
- 3) Personal development – the ability to acquire new knowledge, skills and experiences;
- 4) Positive relationships with others – the ability to establish and maintain such relationships;

- 5) Life purpose – the belief in directing one's life towards achieving goals that are important to oneself, understood as values, beliefs, views or life tasks;
- 6) Self-acceptance – a positive and realistic approach to oneself.

The internal consistency of this scale, as measured by the Cronbach's Alpha index, shows an acceptable property for the shortened version of this tool (0.82) and is recommended in studies of student groups in particular [26].

2. the Questionnaire of Excessive Binge-Watching Behaviors by Starosta, Izydorczyk and Lizińczyk [18], measures the symptoms of binge-watching which may be indicative of behavioural addiction, consists of 30 items to which the respondent responds on a 6-point Likert scale: 1=never, 2=rarely, 3=occasionally, 4=sometimes, 5=often, and 6=always. The results obtained can be presented both as an overall score (up to 180 points) and as scores for individual subscales. These include:

- 1) emotional reactions – binge-watching can be a way of coping with negative emotions, or a source of positive emotions. Emotional distress can occur when binge-watching is not possible;
- 2) lies about the number of episodes of a series watched consecutively and the time spent watching;
- 3) loss of control and neglect of responsibilities from compulsive viewing;
- 4) negative health consequences from neglecting sleep and diet (e.g., irregular eating times, unhealthy snacking during series);
- 5) preoccupation with the subject matter of binge-watching;
- 6) negative social consequences – due, e.g., to neglect of interpersonal relationships.

Cronbach's alpha reliability analysis for the whole method and individual subscales of a questionnaire surveying 1,004 Polish students aged 19–26 years, ranged from 0.67–0.89 [18].

3. Rubin's Viewing Motivation Scale [18]. Consists of six scales with a total of 27 items. The motivations distinguished are as follows:

- 1) entertainment – one watches to have fun and for pleasure;
- 2) coping with loneliness – one escapes into the virtual world to reduce loneliness felt and fictional characters substitutes for personal relationships;
- 3) informational – one derives their knowledge of the world from viewing;
- 4) leisure activities – a way of spending free time alone or with friends;
- 5) social – the series watched becomes the dominant topic of conversation among the viewer's friends. Also, watching series together can be a way of spending time with loved ones.
- 6) escape – losing oneself in virtual reality allows one to escape one's real problems;

A 5-point Likert scale was used: 1=completely untrue; 2=somewhat true, 3=very likely, 4=true, 5=definitely true. Cronbach's alpha reliability analysis for the whole method and individual subscales of the questionnaire surveying 1,004 Polish students aged 19–26 years, ranged from 0.69 – 0.88 [18].

4. De Jong-Gierveld loneliness scale [30]. The model assesses the discrepancy between desires and expectations in interpersonal relationships and what is actually there. The greater the loneliness, the greater the discrepancy. The questionnaire distinguishes between emotional loneliness (feeling the absence of an intimate, close relationship) and social loneliness (absence of a wider circle of friends). The scale contains 11 items using a 5-point Likert scale: 1=yes, 2=yes, 3=not at all, 4=no, 5=no. Total loneliness is defined by the sum of the emotional loneliness score and the social loneliness score: no loneliness (0–2 points), moderate loneliness (3–8 points), severe loneliness (9–10 points), very severe loneliness (11 points). Cronbach's alpha reliability analysis ranges from 0.8–0.9 [30].

Statistical methods. Data analysis was performed with IBM SPSS Statistics, version 28. A significance level of 0.05 was used in the study. First, descriptive and frequency statistics were performed on the collected data; these included mean/median, standard deviation; minimum, maximum, and total scores for the study variables presented quantitatively and as percentages. The results of multivariate linear regression analyses from 726 study participants were then presented, plus corresponding analyses for medical students (N = 308) and other majors (N = 418). The results of three multivariate linear regression analyses are presented below to identify variables that exacerbate binge-watching (the dependent or criterion variable). The predictor variables were gender, psychological well-being, emotional loneliness, social loneliness, and motivations to engage in binge-watching (i.e. for entertainment, to cope with loneliness, information-seeking, leisure, social, and escape). Model 1 presents the results for the whole cohort of students (N = 764); Model 2 presents the results for the group of medical students (N = 308); Model 3 presents the results for the students of other majors (N = 418).

RESULTS

BW risk factors in the whole group of students surveyed.

Table 2 shows the final regression model which was found to account for 51.8% of the variability in BW, $F(10; 676)=74.867$; $p<0.001$. A collinearity analysis indicated a slight collinearity between the predictors ($VIF = 1.060 - 2.195$). Among the variables included in the analysis, 6/10 were found to be significant predictor contributors to BW: escape motivation ($\beta=0.437$; $p<0.001$), entertainment motivation ($\beta=0.171$; $p<0.001$) and leisure motivation ($\beta=0.083$; $p=0.003$), as well as students' psychological well-being ($\beta=-0.150$; $p<0.001$), emotional and social loneliness ($\beta=0.118$; $p=0.003$; and $\beta=-0.089$; $p=0.014$, respectively (Figure 1).

Increased binge-watching among medical students. As indicated in Table 3, the proposed regression model was found to fit the data well $F(10.287)=30.189$; $p<0.001$ and the predictor variables included in the model explain 49.6% of the variance in the dependent variable ($R^2=0.496$). Collinearity analysis indicated slight collinearity between predictors ($VIF= 1.064-2.237$). Based on the regression coefficients, significant predictors for increased binge-watching were escape motivation ($\beta=0.416$; $p<0.001$), students' psychological well-being ($\beta=-0.165$; $p=0.003$), and

Table 2. Multiple regression results for entire sample

Predictors	beta	T	p	95% CI	tolerance	VIF
Intercept		7.996	<0.001	50.715 83.729		
gender	-0.041	-1.503	0.133	-4.839 0.643	0.943	1.060
entertainment motivation	0.171	4.487	<0.001	0.862 2.204	0.481	2.078
motivation to cope with loneliness	0.043	1.112	0.266	-0.380 1.374	0.478	2.104
informational motivation	0.020	0.561	0.575	-0.573 1.032	0.574	1.742
leisure motivation	0.083	2.131	0.003	0.069 1.674	0.465	2.149
social motivation	-0.051	-1.712	0.087	-0.987 0.067	0.800	1.250
escape motivation	0.437	11.141	<0.001	3.698 5.28	0.456	2.195
emotional loneliness	0.118	3.010	0.003	0.438 2.082	0.458	2.184
social loneliness	-0.089	-2.463	0.014	-2.165 -0.244	0.534	1.874
Psychological well-being	-0.150	-4.336	<0.001	-0.649 -0.245	0.586	1.706
$F(10;676)=74.867$; $p<0.001$, $R^2=0.518$						

Beta – Standardised regression coefficient, indicating the relationship between the predictor variable and the criterion variable b; Student's t – indicate whether individual regression coefficients are significantly different from 0; $p<0.05$; p values indicate the probability that a given relationship could occur by chance; 95% CI – basic tool for likelihood-interval estimation; tolerance – an indicator of how much more of the variance in the dependent variable is not explained by the other predictors; VIF – an indicator whose value allows us to determine how independent a given predictor is from the other predictors.

emotional loneliness ($\beta=0.152$; $p=0.014$) and social loneliness ($\beta=-0.118$; $p=0.031$) (Figure 2).

Table 3. Multiple regression results for the medical subsample

Predictors	beta	t	p	95% CI	tolerance	VIF
Intercept		5.306	<0.001	45.032 98.149		
gender	-0.057	-1.349	0.178	-7.047 1.315	0.940	1.064
entertainment motivation	0.074	1.275	0.203	-0.374 1.751	0.501	1.995
motivation to cope with loneliness	0.094	1.557	0.120	-0.300 2.578	0.466	2.144
informational motivation	-0.009	-0.164	0.869	-1.381 1.168	0.592	1.689
leisure motivation	0.113	1.859	0.064	-0.072 2.516	0.456	2.192
social motivation	-0.030	-0.638	0.524	-1.110 0.566	0.777	1.286
escape motivation	0.416	6.811	<0.001	3.064 5.554	0.454	2.201
emotional loneliness	0.152	2.471	0.014	0.337 2.973	0.447	2.237
social loneliness	-0.118	-2.173	0.031	-3.110 -0.154	0.571	1.750
psychological well-being	-0.165	-3.047	0.003	-0.807 -0.173	0.576	1.736
$F(10;287)=30.189$; $p<0.001$, $R^2=0.496$						

* Beta – Standardised regression coefficient, indicating the relationship between the explanatory variable and the dependent variable being explained; Student's t – indicate that the free expression and regression coefficients are significantly different from 0; $p<0.05$; ** $p<0.001$ an indicator of the likelihood of a given relationship; 95% CI – basic tool for interval estimation; tolerance – an indicator of how much more of the variance in the dependent variable is not explained by the other predictors; VIF – an indicator whose value allows us to determine whether a given predictor is not correlated with the other predictors

Table 4. Multiple regression results for the nonmedical subsample

Predictors	beta	t	p	95% CI	tolerance	VIF
Intercept		5.620	<0.001	39.057 82.469		
gender	-0.21	-0.579	0.563	-4.532 2.874	0.916	1.091
entertainment motivation	0.258	4.906	<0.001	1.335 3.093	0.438	2.284
motivation to cope with loneliness	-0.003	-0.062	0.951	-1.159 1.080	0.458	2.185
informational motivation	0.031	0.652	0.515	-0.642 1.445	0.539	1.856
leisure motivation	0.046	0.873	0.383	-0.462 1.616	0.445	2.245
social motivation	-0.062	-1.594	0.112	-1.238 0.126	0.806	1.241
escape motivation	0.456	8.768	<0.001	3.600 5.673	0.448	2.233
emotional loneliness	0.111	2.156	0.032	0.055 2.194	0.454	2.203
social loneliness	-0.069	-1.402	0.162	-2.161 0.401	0.495	2.021
psychological well-being	-0.134	-2.897	0.004	-0.659 -0.116	0.571	1.753

F (10;378)=46.188; p<0.001, R²=0.538

* Beta – Standardised regression coefficient, indicating the relationship between the explanatory variable and the dependent variable being explained; Student's t – indicate that the free expression and regression coefficients are significantly different from 0; p<0.05; ** p<0.001 an indicator of the likelihood of a given relationship; 95% CI – basic tool for interval estimation; tolerance – an indicator of how much more of the variance in the dependent variable is not explained by the other predictors; VIF – an indicator whose value allows us to determine whether a given predictor is not correlated with the other predictors.

Increase in binge-watching among students in other disciplines. As demonstrated in Table 4, the proposed

regression model accounted for almost 54% of the variability in BW, ($R^2=0.538$; $F(10, 378)=46.188$; $p<0.001$). Collinearity analysis indicated slight collinearity between predictors ($VIF=1.09-2.284$). The significant predictors for increased binge-watching were as follows: escape motivation ($\beta=0.456$; $p<0.001$), entertainment motivation ($\beta=0.258$; $p<0.001$), students' psychological well-being ($\beta=-0.134$; $p=0.004$) and experienced emotional loneliness ($\beta=0.111$; $p=0.032$) (Figure 3).

CONCLUSIONS

The study was conducted in accordance with the Standards for Reporting Observational Results in Epidemiology (STROBE) [23] on a representative group of Polish students. Accordingly, it enabled the identification of potential risk factors for the development of binge-watching (BW) among young adults which, according to data, accounts for up to 70% of all binge-watchers [31]. The results indicate that decreased psychological well-being, increased feelings of emotional loneliness and the desire to escape from one's own problems increased the severity of BW, both in the general population of Polish university students and in the specific subgroups of medical and non-medical enrollment. This creates a vision of BW as a behaviour induced by an escape from overlapping life problems, a sense of loneliness, and reduced mental health. Although the pattern of leisure and entertainment motivation is also revealed in the cohort of students surveyed, the results indicating correlations with feelings of emotional loneliness across medical and nonmedical subgroups appear worrying.

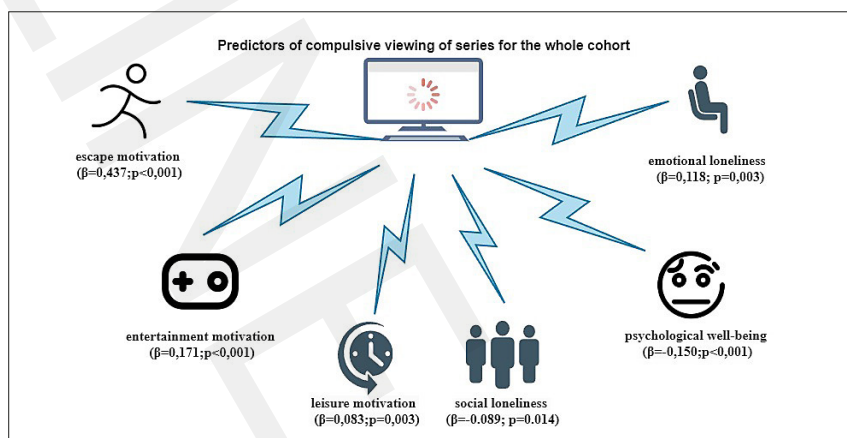


Figure 1. Predictors of compulsive viewing of series for the whole cohort

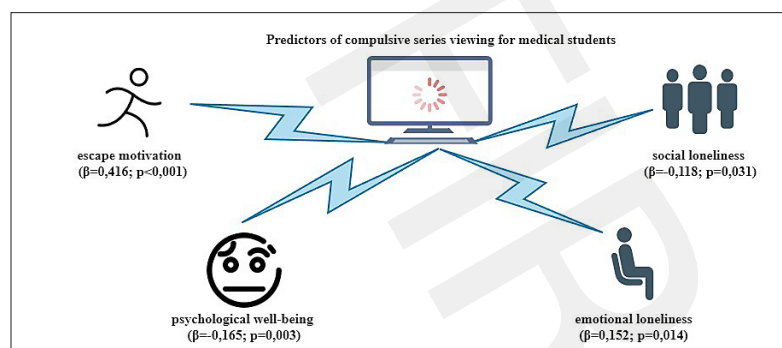


Figure 2. Predictors of compulsive series viewing for medical students

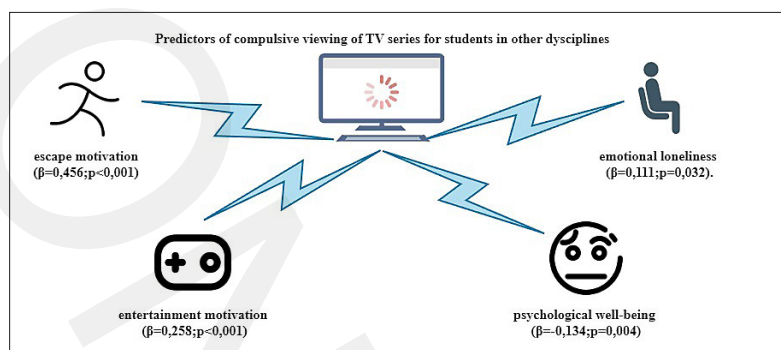


Figure 3. Predictors of compulsive viewing of TV series for students in other disciplines

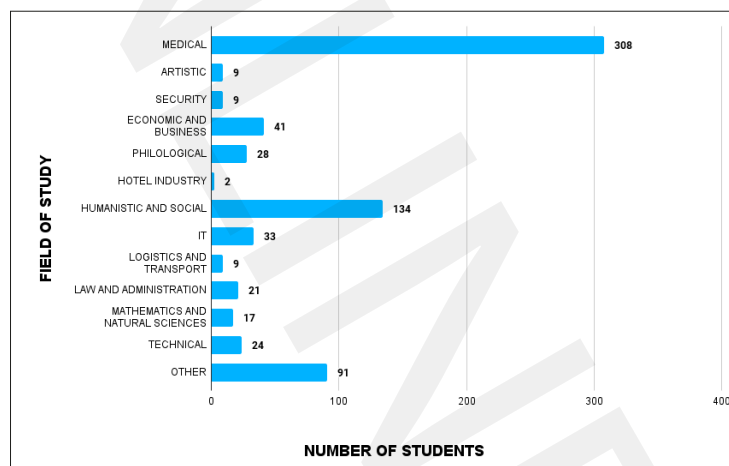


Figure 4. The number of students representing various fields of study

Among medical students, nearly half complained of perceived emotional loneliness (45.1%) and social loneliness (44.8%). In line with the researchers' assumptions, the majority did not feel loneliness. Previously published data indicate that among health-related personnel, including medical students, an average of 20% surveyed before the COVID-19 pandemic complained of perceived loneliness [32]. In contrast, in the post-COVID-19 era, nearly 44% of students in this field experience loneliness [33]. The obtained results indicate that intensification of emotional loneliness appeared to be a risk factor for compulsive viewing, while low levels of social loneliness (understood as having close relationships with other people) was a protective factor against excessive viewing of TV series.

Further research is needed to test other factors that may exacerbate the phenomenon of young people's escape from reality. So far, the literature mentions students complaining about being overwhelmed by everyday life, examination and peer pressure [34]. This would explain why social motivation was not statistically significant (in any of the models) during motivation for BW in this study. Viewing alone provides an opportunity to disengage from the discomfort of the social aspect of studying. This leads to a paradox: students feel increasingly lonely and make their loneliness a companion for compulsive series watching.

Although most non-medical students experienced emotional (52,5%) and social loneliness (58,3%), only emotional loneliness was found to be significant in the model explaining the severity of BW risk factors. Research by Lisitsa et al. (2020) suggests that the role of social media may influence loneliness in two ways, depending on the

age of the respondents. For the elderly, it may provide a means of communication, while for students it is an avenue for deepening loneliness via (invidious) comparisons and corresponding perceived pressures. Perhaps compulsive viewing of TV series can act as a 'pain-relieving/reducing' drug, which allows young people to 'switch off' from their daily pressures. This is consistent with the obtained results regarding the severity of poor well-being, the increase of which predicts the severity of BW. Other researchers have noted the same relationship in relation to perceived anxiety, depressive states and sleep problems [35].

Strengths and limitations of the study. To the best knowledge of the authors, this is the first study in Poland to be conducted on a representative group during the COVID-19 pandemic. The results obtained account for about 50% of plausible candidate causes of BW. What remains are further variables that may contribute positively or negatively to compulsive viewing of TV series by young people. The manuscript followed the STROBE guidelines during the design and conduct of the study [23]. It is recognised that an extended analysis of the components of psychological well-being among young people, which is undoubtedly a risk factor for BW, may be a valuable indication for further inquiry [35]. Motivations for binge-watching show important similarities to addiction to computer games, the Internet and social media, as behaviours that enable escape from depressed mood, made possible by the development of new technologies [36, 37]. The characters in the binge-watched series become closer to the viewer, reducing the sense of emptiness and loneliness, and the fictional reality 'drowns out' everyday problems. Therefore,

compulsive viewing of TV series can become a behavioural addiction [38]. It may be necessary to educate both doctors and parents about the characteristics and harmfulness of such habits among university students and young adults.

A limitation of this study may be the smaller number of men who completed the survey. However, it is noteworthy that other publications presenting results on BW also show gender disparity with a significant female preponderance [10]. The gender distribution of the student population in Poland [25] and the greater involvement of women in responding to online surveys may be at the root of this [39]. Another limitation of the study is that the place of residence was not included among the socio-demographic variables, which may be a potential factor associated with BW severity. The reason for not including a question about this variable in the survey was to anticipate difficulties in understanding the place of residence, as the period of the survey fell partly in the summer holidays when students travel frequently, and then in the academic year when their place of residence becomes large academic cities. However, in future studies, analysis will be also be included of the relationship of BW with the place of permanent residence of students.

Despite these limitations, this study outlines the potential risk factors and motivations for binge-watching among students.

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