

Prevalence of the Hikikomori Syndrome in the Context of Internet Addictive Behaviour Among Primary School Pupils in the Slovak Republic

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Abstract – Hikikomori phenomenon has been theoretically founded and empirically studied in several countries such as Japan, South Korea, mainland China, Taiwan, Thailand, Bangladesh, Australia, the United States, Spain, France, Portugal, Italy, Poland, Iran, and the United States. Previous empirical studies abroad indicate significant differences in the incidence of hikikomori syndrome in the case of boys. The study examined the phenomenon of hikikomori syndrome that has not yet been studied in Slovakia. The aim of the study is to map the prevalence and analyze the hikikomori syndrome phenomenon in primary school students. The sample consisted of 2 767 respondents with an average age of 12.68 years. We found a statistically significant difference in the prevalence rate of the hikikomori syndrome among boys and girls. Hikikomori syndrome is more common among girls than among boys. Furthermore, a positive correlation was found between drug use and hikikomori syndrome in both sexes. In relation to gender differences, our findings have broadened the theoretical foundations of hikikomori syndrome and present a starting point for designing preventive educational activities for professionals working with children and youth.

Keywords – Hikikomori syndrome, Internet addiction, pupil, primary school.

1. Introduction

Hikikomori syndrome represents a form of severe social withdrawal [1]. The authors characterise social withdrawal as a process that can develop gradually in stages [2].

The term hikikomori was defined by Tamaki Saito in *Social Withdrawal: Puberty Without End* as a type of social isolation with specific characteristics [3]. The term refers to the state of social isolation itself, as well as to the individual who suffers from it. Based on certain characteristics of social maladaptation, a person suffering from hikikomori can be described as someone who completely isolates themselves from society (stops going to school, withdraws from the group), remaining in their place of residence for more than six months. Hikikomori syndrome is theoretically distinguished into primary (not being associated with any psychiatric disorder [4]) and secondary hikikomori (associated with an existing psychiatric disorder [5], [6]).

The terms claustrophobia, social withdrawal, homebound syndrome, and hikikomori have been used to describe social isolation in different countries around the world [7]. One can also encounter the problem of socially withdrawn adolescents, known as socially withdrawn youth (SWY) [8].

Regarding gender, hikikomori syndrome is more common in males and primarily manifests during puberty and adolescence [9], [10]. Likewise, the Oxford Dictionary of English states that hikikomori usually affects adolescent males [11]. The prevalence of hikikomori is believed to be four times higher in males than females [12].

Regarding demographics such as age, it can be noted that hikikomori syndrome affects all ages.

Hikikomori syndrome occurs with a 1-2% lifetime prevalence [4], [13], affecting young people aged 12-29 years [14] or aged 14-30 years [15].

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Hikikomori syndrome could be determined by the development of information and communication technologies intended primarily for communication [16].

Currently, hikikomori syndrome represents a sociocultural mental health phenomenon and is a significant social problem, given that it affects at least 1.2% of the population (approximately one million people) worldwide [17]. Cases of hikikomori have also been identified in Europe. In Poland, Marek Krzystanek identified the first case of hikikomori in 2001 [18]. Cases identified in Italy record 100 000 children and adolescents aged 14-21 years [19], in France, the occurrence of 9 cases of hikikomori is mentioned by Furuhashi, Tsuda, and Ogawa [20], and other cases have also been reported [7]. Several hikikomori cases have also been identified in Spain [21], with 190 cases identified in Barcelona [22].

Different terminology has been used for risk behaviours related to the Internet use, such as "Internet addiction" [23], "pathological Internet use" [24], and "problematic Internet use" [25]. These are characterised by identical features: device use, associated with loss of sense of time or neglect of basic routines; withdrawal symptoms at times when they are forced to discontinue and reduce the Internet use such as: (symptoms of anxiety, increased irritability, anger, physical protest and depression; tolerance, which is marked by an increase in demands on technological equipment and time allocation); negative consequences such as quarrels, lying, poor performance in school and work, or social isolation [26].

The group of authors investigated the association between social isolation and social media, finding that social isolation can be caused as a consequence of social media use. The respondents expressed in the research that they do not identify online interpersonal interaction with genuine social relationships [27]. Dawid Adamski similarly states that new technologies impact social withdrawal [18].

The social contact of individuals with hikikomori syndrome is predominantly through the Internet [8], [28]. Such individuals are engrossed in the Internet environment and avoid physical interaction with other people. Young people are more likely to develop hikikomori syndrome due to their addiction to the Internet. Here, a person's social withdrawal is a consequence of their developed addiction to the Internet [29].

2. Methods

The main aim of the research is to identify and analyse the prevalence of hikikomori syndrome in the context of addictive behaviour in selected primary school pupils in the Slovak Republic. We set the research questions:

RQ1: What is the prevalence of hikikomori syndrome in a selected sample of primary school pupils in the Slovak Republic?

RQ2: What is the relationship between hikikomori syndrome and the Internet addiction in a selected sample of primary school pupils in the Slovak Republic?

The empirical research was conducted in 2022. In conducting the research, we used a quantitative questionnaire method, which was constructed from: the hikikomori questionnaire (HQ25), a measurement instrument containing 25 items in three subscales representing socialisation, isolation, and emotional support. The cut-off score for hikikomori syndrome was 42 out of 100 points [1]. Respondents assigned values to statements based on a four-point Likert scale (completely disagree-0 and completely agree-4). CIUS instrument was used to measure the Internet addiction. It is a 14-item questionnaire assessing the frequency of occurrence, with total scores ranging from 0 to 5 points measured on a five-point Likert scale ("never", "rarely", "sometimes", "often", and "very often"). The CIUS cut-off score is 20 points [30]. The study population consisted of 2 767 respondents, 1 413 boys and 1 358 girls aged 11-15 years. The mean age of the respondents was 12.68 years. The representation of respondents by region was as follows: Žilina Region - 678, Trenčín Region - 642, Nitra Region - 504, Bratislava Region - 285, Trnava Region - 122, Košice Region - 50. Data collection was carried out between September and December 2022 with the approval of the UMB Ethics Committee in Banská Bystrica.

3. Results

Table 1. Difference between boys and girls in the rate of hikikomori syndrome

| | Boys (n=1413) | | | Girls (n=1356) | | | Mann-Whitney U-test | | |
|------------|------------------|-------|--------|-------------------|-------|--------|------------------------|--------|-------|
| | AM | Mdn | SD | AM | Mdn | SD | U-test | Z | p |
| Hikikomori | 34.47 | 33.00 | 15.323 | 37.61 | 36.00 | 16.178 | 849702.000 | -5.151 | 0.000 |

Legend: n-number; AM-mean; Mdn-median; SD-standard deviation; U-test and Z-values of Mann Whitney U-test; p-statistical significance.

A statistically significant intergender difference was found ($p=0.000$) at a significance level of $p \leq 0.001$ in the hikikomori syndrome considered. There is a statistically significant difference ($p=0.000$) between boys and girls in the rate of hikikomori syndrome at the significance level of $p \leq 0.001$. Hikikomori syndrome is more common in girls (AM=37.61; Mdn=36.00) than in boys (AM=34.47; Mdn=33.00).

Table 2. Difference between boys and girls in the hikikomori syndrome subscales - socialisation, isolation, emotional support

| Hikikomori subscale | Boys (n=1413) | | | Girls (n=1356) | | | Mann-Whitney U-test | | |
|---------------------|---------------|-------|-------|----------------|-------|-------|---------------------|--------|-------|
| | AM | Mdn | SD | AM | Mdn | SD | U-test | Z | p |
| Socialisation | 14.40 | 14.00 | 8.135 | 16.38 | 16.00 | 8.905 | 832816.000 | -5.958 | 0.000 |
| Isolation | 10.98 | 11.00 | 5.974 | 12.52 | 12.00 | 5.720 | 817005.000 | -6.714 | 0.000 |
| Emotional support | 9.09 | 9.00 | 4.501 | 8.70 | 9.00 | 4.571 | 904272.500 | -2.562 | 0.010 |

Legend: n-number; AM-mean; Mdn-median; SD-standard deviation; U-test and Z-values of Mann Whitney U-test; p-statistical significance.

Of the hikikomori syndrome subscales considered, we found a statistically significant intergender difference in the socialisation factor ($p=0.000$) and the isolation factor ($p=0.000$) at a significance level of $p \leq 0.001$. The socialisation (AM=16.38; Mdn=16.00) and isolation (AM=12.52; Mdn=12.00) factors in girls were significantly higher than in boys concerning the hikikomori syndrome (socialisation: AM=14.40; Mdn=14.00; isolation: AM=10.98; Mdn=11.00). In the factor of emotional support, a statistically significant difference was confirmed between boys and girls at the significance level of $p \leq 0.05$ ($p=0.010$). In the emotional support factor, boys (AM=9.09; Mdn=9.00) scored higher than girls (AM=8.70; Mdn=9.00).

Table 3. Analysis of the relationship between the Internet addiction and the rate of hikikomori syndrome

| N=2769 | Hikikomori | |
|--------------------|------------|-------|
| | ρ | p |
| Internet addiction | 0.331*** | 0.000 |

Legend: *** $p \leq 0.001$, ** $p \leq 0.01$, * $p \leq 0.05$; rho-Spearman correlation coefficient; p-statistical significance; N-number.

A statistically significant relationship ($p=0.000$) was identified between the variables Internet addiction and hikikomori syndrome at a significance level of $p \leq 0.001$ for both genders, with a moderate positive relationship ($\rho=0.331$).

There is a positive correlation between addictive behaviour and hikikomori syndrome in both genders.

Table 4. Relationship between the Internet addiction and hikikomori syndrome in terms of gender differences

| | Boys (n=1413) | | Girls (n=1356) | |
|--------------------|---------------|-------|----------------|-------|
| | Hikikomori | | Hikikomori | |
| | P | p | ρ | p |
| Internet addiction | 0.346*** | 0.000 | 0.315*** | 0.000 |

Legend: *** $p \leq 0.001$, ** $p \leq 0.01$, * $p \leq 0.05$; rho-Spearman correlation coefficient; p-statistical significance; N-number.

A statistically significant relationship ($p=0.000$) was identified between the variables Internet addiction and Hikikomori syndrome at a significance level of $p \leq 0.001$ for both genders, with a moderate positive correlation ($\rho=0.331$) higher for boys than for girls, where a moderate positive correlation reaches a level of ($\rho=0.315$).

4. Discussion

The authors, Hoon Jung Koo and Jung-Hye Kwon conducted a meta-analysis on a research sample of 59 283 respondents aged 7-12 and 13-18 years [26]. The authors' empirical findings indicate that the most prominent intrapersonal risk factors for Internet addiction include: Escape from self ($r= 0.42$), emotion, mood, stress and coping with effect size ($r= 0.27- 0.28$), impulsive/new search ($r= 0.28$), harm avoidance ($r= 0.28$), depression/anxiety ($r= 0.26$), loneliness ($r= 0.20$), coping with negative stress where primary school students scored ($r= 0.31$). Among the above attributes of Internet addiction, the following characteristics are typical of hikikomori syndrome: escape into the world of the Internet [16], then emotional-cognitive reactions such as aggression, indirect anger [16], morbid moodiness and irritability (dysthymia) [31], stress-related disorders [31]. Hikikomori syndrome also represents an avoidance strategy as a special coping strategy in stressful situations [32]. Also, modern-type depression (MTD) [33] and also extreme forms of loneliness [34] may be a factor in the occurrence of hikikomori syndrome.

Other risk factors for Internet addiction include overprotective parenting [35], [36], lack of involvement of a parent [16], or presence of other psychopathology of the parent [36].

Due to improvements in information technology (IT) and an increasing number of adolescents addicted to the Internet is SWY characterised by extreme individualism and decreasing need for interpersonal personal contact.

The cause of the SWY problem is mainly the breaking of social ties, for example, due to lifestyle changes [8]. SWY individuals show manifestations such as hikikomori syndrome, and they minimise social communication with the outside world, constrict communication between family members [8], and refuse to attend school.

Concerning gender, we found that girls were more likely to have Hikikomori syndrome (AM=37.61; Mdn=36.00) than boys (AM=34.47; Mdn=33.00), an oppositional finding to previous research findings [37]. The data are from the Young People's Attitudes Survey of 5 000 individuals (aged 15-39 years) where, with 3 262 participants, of whom (n males=1 555) and (n females=1 707), the prevalence of hikikomori was 1.8% (n= 58: males n= 38, females n= 20). The lifetime prevalence of hikikomori was higher in men than in women ($p < 0.01$) [4]. Similarly, other authors [12] reported that the prevalence of hikikomori syndrome was four times higher in men than in women. The higher prevalence of hikikomori in men than in women may be partly justified by the fact that more cases have been reported in men to date [16]. Hikikomori affects young people aged 14 to 30 years, particularly males - the prevalence (between 70% and 90%) and surveys conducted to date may underestimate the number of isolated girls [15].

Our research further identified intergender differences in the different categories of hikikomori syndrome. We found that girls were more likely than boys to have problems with socialisation and isolation. Boys showed a problem with emotional support more often - that is, they felt less emotional support than girls. The intergender differences in hikikomori syndrome are partially supported by a study [37], which focused on the characteristics and gender differences of hikikomori syndrome in a sample of 2 459 participants aged 15 years and older, i.e. (aged 15-64 years). 164 (6.7%) respondents reported social withdrawal for six months, 53.7% of whom were male and 46.2% female. In the above study, it was found that the characteristics of hikikomori syndrome manifest differently in men and women; hikikomori tends to develop in men who have poorer overall self-esteem, feelings of anxiety, and passive suicidal ideation, while in women, hikikomori tends to develop due to the absence of social support. Our empirical findings are consistent with the research mentioned above in the emotional domain in boys. Boys show emotions and feelings sparingly or remain hidden more often, while girls tend to express emotions. This trend has an evolutionary background [38], and the absence of emotional support in males is also influenced by the co-occurring cultural stereotype of society, whereby males are led to believe that expressing their

emotions is taboo [39]. At the same time, women, unlike men, incorporate verbal expressions towards others into their coping strategies to gain emotional support [40]. In research in the Slovak Republic with a sample of 1 423 children and adolescents aged 9-17 years, an increased prevalence of emotional problems was noted. Boys and girls differed in their levels of emotional problems, with girls showing significantly higher rates of emotional problems than boys [41]. Here, one may question whether the reported higher prevalence of emotional problems in girls is related to their ability to talk about their problems in front of others. In contrast, boys try to deal with the emotional problem on their own without sharing.

Similarly, research [41] has found intergender differences in social support, with girls reporting higher levels of social support from friends than boys, again completing the picture of girls' higher rates of craving forms of social support. On the idea of social support, it should be noted that social support represents one coping mechanism. At the time of the COVID-19 pandemic, access to technology represented a key factor - a means of social support, which may account for the need for increased digital device use and consequent Internet dependence [42].

Internet addictive behaviour can be considered a correlating factor of hikikomori syndrome. In our research, a statistically significant relationship ($p=0.000$) was identified between the variables of Internet addiction and hikikomori syndrome at a significance level of $p \leq 0.001$ for both genders, with a moderately strong positive relationship ($\rho=0.331$) (Table 3). At the same time, we found that the medium strong positive correlation ($\rho=0.331$) achieved by boys is higher than that achieved by girls, where the medium strong positive correlation reaches the level ($\rho=0.315$) (Table 4).

Hikikomori could be considered a form of Internet addiction [43]. Internet addiction is comorbid with hikikomori [2], with respondents who suffered from hikikomori syndrome spending more than 12 hours a day in front of a computer. Further implicit support is found in a study declaring that hikikomori is associated with a group of disorders associated with addiction [44]. Subsequently, another study again suggests that hikikomori could be comorbid with Internet addiction [45].

University students with problematic Internet use (PIU) show more features of hikikomori syndrome compared to non-PIU students ($p = 0.010$ and $p < 0.001$, respectively). Hikikomori manifestations were found to significantly predict women's total IAT scores ($p < 0.001$), while binary regressions showed that hikikomori and compromised social quality of life predicted (supported) women's PIU.

In contrast, the presence of hikikomori syndrome symptoms was not shown to predict PIU in men, as men's problematic Internet use was more likely to be predicted by reduced social quality of life [46]. Other research on hikikomori syndrome and the SWY phenomenon suggests that socially withdrawn SWY youth show significantly higher Internet addiction scores [8]. The online environment has a clear impact on social withdrawal, as indicated by a study that confirmed a strong correlation between social media use and social isolation (19-32 years) [27].

The online environment may represent a means of interpersonal communication, socialisation, and self-realisation for hikikomori, and a link between hikikomori syndrome and social contact - interpersonal communication specifically through social media - has been demonstrated [28].

Hikikomori syndrome is a new phenomenon resulting from the cultural revolution represented by mass communication in the era of the Internet, especially Web 2.0, i.e., social networking [28].

The causes of hikikomori syndrome related to the school environment may be the child's experience of social exclusion and other forms of rejection by peers [8], [47], [48], inability to fit into school life [49], loss of motivation to attend school [29], or bullying [37]. As part of the theoretical reflection on the issue, it is necessary to approach the relationship between Internet addiction and social isolation. We are inclined to the view that the Internet use in social isolation cannot be clearly called Internet addiction [7]. Internet addiction can arise from different inclinations and starting points and takes several directions, so we present several theoretical models developed by us:

In the first model, social isolation arises due to the setting of the social environment. We draw on an idea that theoretically justifies the emergence of social isolation as an anomic response of the individual concerning changing opportunity structures [48]. The idea of the model also finds support in Marco Crepaldi, who identifies the hikikomori syndrome with the adaptive social discomfort that affects all economically developed countries of the world [15]. In this model, the Internet represents the primary social environment and space of self-realisation. For example, situational factors can be subsumed under this model. The risk of persistent social withdrawal and disconnection may have increased in the Slovak Republic, for example, as a result of the anti-poverty measures in the context of COVID-19, especially given the options available - distance learning from home, socialisation via the Internet, or social disruption due to rules blocking physical contact [17].

In the second model, Internet addiction represents

an associated (non)pathological phenomenon developed as a concomitant attribute of social isolation. The model includes people who are socially isolated due to life circumstances, such as threats to physical and mental health, as well as cases of individuals who accept social isolation as a natural part of life. Individuals naturally eliminate activities carried out in the physical environment in favour of the online environment. The online environment is a substitute environment for fulfilling the need for self-realisation and socialisation. In hikikomori syndrome, the online environment represents a contact point with society and can be seen as a supportive factor in reducing the phenomenon. We add that the first and second models are, in our opinion, appropriate to explain the association between hikikomori syndrome and Internet addiction.

In the third model, social isolation arises due to pathological Internet addiction. The primary cause of social isolation is pathological Internet addiction. Social isolation arises due to the gradual voluntary separation of the individual from the social environment. The model includes, for example, non-substance addiction - online gambling. In this case, the online environment cannot be used as a means of reducing Internet addiction.

When Internet addiction is suspected, focusing on the primary causal relationships is necessary. One of the causes of Internet addiction may be social isolation. In practice, it is known that family and close friends usually only become alert when a child shows signs of Internet addiction, paradoxically attributing the consequence of reduced social participation to the addiction. Internet addiction can, however be a concomitant phenomenon to reduced social participation, ongoing social isolation, reduced opportunities for self-realisation in the real environment, absence of a stimulating real environment, poor quality interpersonal relationships, or absence of interpersonal relationships.

As a member of the school support team, the social educator can target intervention and prevention in the following ways:

a) in the school environment in the direction of the interpersonal perspective:

- in the area of relational skills - (sociability, social support, relationships with peers). For socially withdrawn youth, social workers and educators conduct training for the development of social skills [47], [50], Itoh, Kohki and Ito Yasutaka (2012) [51], and interpersonal skills [52].

- strengthening intrapersonal protective factors [26], such as adjusting the school environment (according to the individual's needs), in the direction of stress management, self-control, emotional regulation, temperament, self-identity, self-esteem, and emotions.

b) in the school environment in the direction of the digitalisation of education:

- in "the conceptual integration of ICT in schools with clearly defined content, or at least effective control of its use..." [53].

c) in the framework of socio-pedagogical activities and education:

- areas of parental relations - (stable parental bond, positive parental attitude, functional communication).

- by hikikomori individuals using digital devices as a primary means of interpersonal communication, the creation of a column within a magazine for hikikomori individuals that would encourage correspondence between hikikomori readers, such as the existing HikiCom'i [54], maybe inspiring. The Internet can also be used as a forum to expand a person's social networks and as a primary means to establish meaningful relationships and acquire social skills and social support [55].

5. Conclusion

In terms of gender, we found that, contrary to previous studies, girls had a higher probability of hikikomori syndrome than boys. The study also identified gender differences in various types of hikikomori syndrome. We found that girls had social problems and isolation problems more often than boys. Boys have had more emotional support problems. Based on our research, Internet drug addiction behavior is considered to be a correlation factor for hikikomori syndrome. A statistically significant correlation between Internet addiction and both gender-specific hikikomori syndrome variables were found, as well as a moderately positive correlation.

This study presents the results of the empirical research on hikikomori syndrome, in a series of variables (impulsive behavior, gender, etc.), which are not given proper attention. The scientific research is the starting point for further empirical research and analysis of this problem and the development of new strategies and measures for supporting professions. The study is an interesting resource for practitioners in pedagogy, psychology, and sociology who deal with solutions to problem at the theoretical-empiric level. Because of the scope, complexity of the sample, and method, it is a unique research in Slovakia. Scientific research also has an impact on the education process, as the results can be integrated into several courses taught at universities, focusing on the risks and prevention possibilities of young children and adolescents.

Understandably, the research conducted has its limitations. One limitation is the questionnaire method used.

Within the questionnaire, it would have also been appropriate to investigate other specifics of the target group or to apply a different measuring instrument. The research did not investigate the motivations of girls and boys that lead them to risky behaviour. We perceive another limitation as the fact that despite the more significant number of variables examined we could not cover all the risk attributes of the issue addressed. The scientific study is a partial output of the KEGA project No. 024UMB-4/2022 entitled "Prevention of online risky behaviour".

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