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Internet use among university students: A reason for concern?

Abstract

International studies reveal that students have more freedom, as well as unstructured and unsupervised time, which makes them susceptible to problematic internet use (PIU). Although students are a risk group for PIU, no evidence of local research on internet use among students could be identified. This article reports on a study on the nature and impact of internet use among students at a tertiary institution. A quantitative research approach was adopted and a survey with a group-administered questionnaire was conducted with 295 second-year students (between 18 and 25 years) registered for a module in a basic social science. Respondents were recruited through convenience sampling. The nature of internet use was explored with reference to internet platforms, reasons for internet use, devices for connecting to the internet, and the locations where respondents access the internet. The impact of internet use was explored through eight constructs adopted from two screening instruments in the public domain, i.e. the Internet-Related Addictive Behaviour Inventory and the Problematic Internet Use Questionnaire. The research results were calculated by means of descriptive and association statistics, specifically the chi-square and Fisher's exact tests. Ethical considerations, such as informed consent and voluntary participation, were observed. The research results revealed that the respondents preferred email and chatting as internet platforms, while they used the internet mostly for extrinsic reasons, such as for assignments and socialising. Online activities occurred mostly on campus and at home during the early evenings via mobile phones or laptops. The respondents scored relatively low on the constructs measuring PIU. However, two constructs 'escape from problems' and 'loss of control' presented with markedly higher scores and could be flagged as potential risk areas. Furthermore, association statistics indicated a statistically significant difference of some constructs with regard to gender and the romantic relationship status of respondents, which could be considered in the provision of student support services. The development and evaluation of evidence-based interventions for the prevention, treatment and management of PIU are recommended.

Keywords: *Internet use; problematic internet use; internet addiction; student; young adult; tertiary institution, student support services*

1. Introduction

Globally, widespread access to the internet brought about significant benefits in areas such as research, education, online banking and shopping, communication, social networking, and news (Dhok *et al.*, 2016; Young, 2004). Worldwide the internet is used by over three billion users (Zafar, 2016) for *intrinsic reasons* (recreation

and entertainment) and *extrinsic reasons* (for work or learning) (Adiele & Olatokun, 2014). The internet has modified the way individuals think and occupies a place in most aspects of people's lives (Kapahi *et al.*, 2013). However, the misuse of the internet is becoming an increasing problem. Constant and obsessive internet use has become a particular source of interest to researchers and scholars alike, leading to what is now termed Problematic Internet Use (PIU); also used interchangeably with the terms internet addiction, internet addiction disorder (Thatcher & Goolam, 2005), internet abuse, pathological computer/internet use, and internet dependence (Chou *et al.*, 2005). Adiele and Olatokun (2014) indicate that PIU occurs mostly through internet usage for intrinsic reasons. PIU can be described as the excessive use of the internet, which leads to biopsychosocial problems (Kapahi *et al.*, 2013). PIU is not listed as a disorder in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5) (Kardefelt-Winther, 2016). Nonetheless, both Christakis (2010) and Young (2009) state that PIU is often an unrecognised disorder that leads to occupational and social dysfunction.

Epidemiological surveys suggest that PIU is becoming a serious mental health problem. Groups vulnerable to PIU include children, youths, males, students, single persons, sexual minorities, middle aged females, and the less educated (Kuss *et al.*, 2013; Wang *et al.*, 2013; Lin *et al.*, 2011). The focus of this article will be on students as one of the most vulnerable populations for PIU (Kuss *et al.*, 2013; Young, 2009). An electronic literature search confirmed a gap in research on PIU among students in South Africa. The rationale for this study was thus to explore and describe the nature and impact of internet use among students studying at a South African tertiary institution in order to offer recommendations to student support services at universities for the prevention, treatment and management of PIU among students.

The theoretical framework underpinning this research was the biopsychosocial perspective (hereafter referred to as BPS perspective). This perspective was developed by George Engel to incorporate the patients' biological, psychological and socio-cultural context to understanding the impact of disease and illness, as opposed to a narrow medical focus (Hatala, 2012; Carrio *et al.*, 2004). The BPS perspective allowed the researchers to consider the interrelatedness of the biological, emotional, and social impact of PIU on students as young adults (between 18 and 25 years).

This article reports on the results of a study with the aim to explore and describe the nature and impact of internet use among students at a South African tertiary institution. The article offers a literature review as background to the empirical study, followed by the research methods, research results, discussion, and recommendations.

2. Literature review internet use/problematic internet use

2.1 Nature and impact of internet use

It is generally accepted that PIU comprises the following components: excessive internet use, withdrawal, tolerance, and adverse consequences or negative repercussions (Chakraborty *et al.*, 2010; Tao *et al.*, 2010; Weinstein & Lejoyeux, 2010). *Excessive use* describes the loss of a sense of time during the online activities or neglecting basic drives. *Withdrawal* refers to the person experiencing tension, anxiety and/or depression when it is not possible to use the internet. *Tolerance* refers to the urge for increased internet use to satisfy a need. Individuals experiencing tolerance tend to buy more software and spend more hours online. Finally, *adverse consequences* or *negative repercussions* refer to the adverse effects of PIU manifesting itself in lying, poor academic performance, social isolation, or fatigue. In

the literature, it is suggested that PIU can negatively influence the social, psychological, health and academic functioning of internet users. It has been found that internet users could spend up to 80 hours per week online, staying awake until the early morning hours, causing sleep deprivation (Young, 2009). The fatigue caused by late night online sessions makes it difficult to concentrate during the day and leads to a deterioration in academic or occupational performance (Müller *et al.*, 2014; Young, 2004). Furthermore, extended hours on the computer might leave the individuals' immune systems vulnerable (Young, 2004). Other studies have reported irregular sleep patterns, as well as cases of sleep apnoea and teeth grinding because of PIU (Weinstein & Lejoyeux, 2010). In severe cases, internet users could take extreme measures, for example taking caffeine capsules or wearing adult diapers, to extend online time (Young, 2009).

PIU could also have detrimental effects on the social and inter-personal relationships of internet users. Family life suffers, as individuals who experience PIU tend to be absent from communal family activities (Weinstein & Lejoyeux, 2010). Furthermore, online affairs are a common consequence of PIU. These affairs have a tendency to develop more rapidly into sexual relationships, often causing relationship problems and marital discord (Young, 2004).

Previous studies also confirmed that pre-existing symptoms such as depression, bipolar disorder, social isolation, low self-worth, loneliness, and other comorbid disorders might worsen due to PIU, thereby continuing a dysfunctional cycle (Müller *et al.*, 2014; Douglas *et al.*, 2008).

Teaching and assessment practices at tertiary institutions encourage the extensive use of online devices, with the unintended risk of PIU. Students are therefore regarded as a risk group for PIU (Kawa & Shafi, 2015; Liu, 2015).

2.2 Students as a risk group for PIU

Students are considered individuals in the developmental stage of young adulthood (Louw & Louw, 2009). Characteristics of young adults include risk taking behaviour and greater internet use (Fulmer, 2011), which could increase the likelihood of PIU. Students may revert to addictive behaviours to cope with the developmental challenges of young adulthood, such as identity development, meaningful and intimate relationships, peer pressure, and poor planning and decision-making (Chou *et al.*, 2005). Students are most likely to use the internet for communication purposes (Facebook, blogs and online chatting), online games, as well as visiting websites for video, sound and music downloading, which result in much time invested online rather than focusing on academic work (Kawa & Shafi, 2015; Liu, 2015). The consequences include poor study habits, failing modules, incomplete assignments, and loss of concentration during lectures (Douglas *et al.*, 2008; Young, 2004).

Several factors might contribute to PIU among students. These factors include free and unlimited internet access, unstructured time, newly experienced freedom from adult supervision, full encouragement from lecturers and administrators to use the internet, and social intimidation and isolation (Kawa & Shafi, 2015; Salehi *et al.* 2014).

3. Research methods

A quantitative research approach was considered the most relevant to explore and describe the nature and impact of internet use among students (Fouché & De Vos, 2011). A survey design was used (Creswell, 2014) and data were collected by means of a group-administered

questionnaire (Delport & Roestenburg, 2011). The nature of the internet use was explored with reference to internet platforms, reasons for internet use, devices for connecting to the internet, and the locations where respondents access the internet. Several screening instruments have been developed to diagnose PIU and to determine the extent of the problem, such as the Internet Addictive Scale (IAD), the Internet-Related Addictive Behaviour Inventory (IRABI), and the Problematic Internet Use Questionnaire (PIUQ) (Young, 2009; Shaw & Black, 2008; Thatcher & Goolam, 2005). In this study the impact of internet use was explored by means of eight constructs derived from two screening instruments in the public domain, i.e. IRABI (Brenner, 1997) and PIUQ (Demetrovics *et al.*, 2008). Both screening instruments explore the constructs by means of a 4-point Likert scale, although neither of the instruments lend themselves to the diagnosis of PIU. Face and content validity were confirmed before data collection. Cronbach alpha coefficients were calculated to determine reliability (Delport & Roestenburg, 2011; Pietersen & Maree, 2007a). The alphas, ranged between 0.25 and 0.75 (see Table 1).

Table 1: Constructs and Cronbach alpha coefficients

Constructs	α	Conceptualisation
Escape from problems	0.69	The person avoids real life confrontation (face-to-face communication), and deals with depression and loneliness through accessing the internet (Young, 2009; Thatcher & Goolam, 2005).
Introversion	0.69	The internet is used to deal with low self-esteem and to withdraw from social interaction (Kapahi *et al.*, 2013).
Loss of control	0.61	The internet is used for prolonged periods and the person finds it difficult to decrease the amount of internet use (Demetrovics *et al.*, 2008).
Negative effects	0.75	Excessive internet use results in adverse effects, such as sleeping disorders, physical changes such as fatigue, weight loss, headaches or backaches, lying, and poor academic/work performance (Kapahi *et al.,* 2013; Young, 2009).
Neglect	0.69	Everyday activities and essential needs, such as household chores, work, studies, eating and interpersonal relationships, are neglected due to increased internet use (Demetrovics *et al.*, 2008).
Obsession	0.64	Anxiety, worry and depression caused by (perceived) restrictions to access the internet (Yu-Chen *et al.*, 2012).
Related activities[1]		Engagement in activities related to the internet when the person is not online, such as reading internet magazines and books, as well as re-organising computer files (Young, 2004)
Withdrawal	0.66	Unpleasant feelings, such as moodiness, restlessness, irritability, and/or depression, when trying to reduce internet use (Young, 2004).

Data analysis comprised descriptive statistics (e.g. mean, standard deviation, frequency, and percentage) to compile the demographic profile of respondents and to explore the nature of their internet use (Pietersen & Maree, 2007b). Furthermore, association statistics were calculated to compare the reasons for internet use and the internet platforms that were used with the gender of the respondents. It should be noted that where 25% of the cells have expected counts less than 5, the Fisher's exact test results are reported as opposed to the chi-square test result (Weinbach & Grinnell, 2015). The mean scores of the eight constructs

exploring the impact of internet use were calculated and, similar to several international surveys among students, no strong indication of PIU was detected (Byun *et al.*, 2009). In this regard, Steyn (2016) noted that respondents often tend to under-report on matters of addiction even if anonymity is assured and self-report measures applied. Therefore, the researchers determined whether the respondents reported a score of 3 or 4 on a 4-point Likert scale on any item per construct in order to flag signs of possible PIU. In addition, chi-square tests were calculated to compare the eight constructs measuring PIU with gender and the romantic relationship status of the respondents respectively (Weinbach & Grinnell, 2015). Statistical significance was determined according to $p \leq 0.05$ as is often the criterion in the social sciences (Weinbach & Grinnell, 2015).

The study population consisted of second year students registered for a module in a basic social science that attracts students across the university (Babbie, 2016). Non-probability sampling, specifically convenience sampling, was used and 295 students (62.9% response rate) participated in the study (Babbie, 2016). The sampling criteria included that the respondents had to be young adults between the ages of 18 and 25 years and be registered for the specific second year module (Rubin & Babbie, 2010).

Ethical considerations, such as avoidance of harm, informed consent, voluntary participation, no deception of respondents, no violation of respondents' privacy, and maintaining confidentiality, informed the operationalisation of the empirical study (Strydom, 2011). Ethical clearance to conduct the study was obtained (Reference number: GW20150312HS).

4. Results

4.1 Demographic profile

The mean age of the respondents was 20.23 years (SD = 1.15) at the time of the study. More female (80.89%) than male (19.11%) respondents participated in the study and this is indicative of the gender distribution of higher education institutions in South Africa (Statistics SouthAfrica, 2012). The sample comprised of mostly Black African (42.81%) and White (49.66%) students with little representation from other racial groupings. Most respondents indicated English (31.1%) as their home language, followed by Afrikaans (28.27%) and isiZulu (7.77%). Characteristic of young adulthood, the majority of the respondents (55.59%) were involved in a romantic relationship (Sigelman & Rider, 2009). In terms of living arrangements, the largest percentage of the respondents resided with their parents/caregivers (30.17%) followed by those who lived on their own (18.64%) or in university residences (17.79%). Most respondents indicated that their financial situation is either adequate (46.94%) or limited (34.35%). On average, the respondents spent three hours on the internet per session and preferred online activities in the evening between 18:00 and 22:00 (76.95%) or during the early afternoon between 12:00 and 16:00 (50.85%).

4.2 Nature of internet use

The nature of internet use among students was explored with reference to their preferred internet platforms, their reasons for internet use, the predominant devices used for connecting to the internet, and the locations for accessing the internet. Table 2 offers an overview of the internet platforms used by respondents with reference to the frequency and total percentage.

Table 2: Internet platforms

Internet platform		
	n	%
Email	262	88.81
Online chat/messaging	241	81.69
General searching	214	72.54
Downloading music/movies/software	207	70.17
WWW (World wide web)	197	66.78
Reading news	123	41.69
Skype	68	23.05
File transferring	64	21.77
Peer-to-peer file sharing	46	15.59
Online shopping	31	10.51
Online interactive games	29	9.83
Newsgroups	27	9.15
Online gambling	6	2.04
Cybersex	3	1.02

Email (88.81%) and online chat/messaging (81.69%) were the preferred internet platforms. Furthermore, there was a high prevalence of general searching (72.54%), downloading (70.17%), and accessing the WWW (66.78%). Cybersex (1.02%) and online gambling (2.04%) were the internet platforms reported to be accessed the least.

Table 3: Reasons for internet use

Reasons for internet use		
	n	%
Assignments	281	92.25
Knowledge	256	87.07
Information	239	81.02
Friendship	209	70.85
Boredom	203	68.81
Learning/educational purposes	195	66.1
General knowledge	178	60.34
Excitement	66	22.37

Reasons for internet use		
New experiences	55	18.64
Well-being	41	13.9
Loneliness	38	12.88
Independence	29	9.83
Satisfaction	24	8.14
Frustration	19	6.44
Facelessness/anonymity	18	6.1
Isolation	16	5.42
Depression	13	4.41
Control	12	4.07
Eroticism	10	3.39
Intimacy	8	2.71

Almost all the respondents indicated academic motivations, namely assignments (92.25%), knowledge (87.07%) and information (81.02%), as the predominant reasons for internet use (see Table 3). A relatively large number of the respondents indicated socially related reasons for internet use, as evident in the percentages for friendship (70.85%) and boredom (68.81%). Noteworthy is the comorbid conditions associated with PIU, such as loneliness (12.88%), isolation (5.42%) and depression (4.41%), which had relatively low frequencies. Intimacy (2.71%) and eroticism (3.39%) were almost disregarded as reasons for internet use.

Table 4: Devices for connecting to the internet

Devices for connecting to the internet		
	N	%
Mobile/cell phone	290	98.31
Laptop	235	79.66
Desktop computer	224	75.93
Tablet	138	46.78

As indicated in Table 4, most respondents reported that they connect to the internet via their mobile phones (98.31%), followed by laptops (79.99%) and desktop computers (75.93%). The respondents had extensive access to the internet in their lived environment, namely on campus (92.88%), the home environment (83.39%), library (65.42%) and their own room (63.05%), as indicated in Table 5.

Table 5: Locations for accessing the internet

Locations for accessing the internet		
	n	%
On campus	274	92.88
Home	246	83.39
Library	193	65.42
My room	186	63.05
Restaurants/coffee shops	109	36.95
Class/lecture hall	106	35.93
Internet café	42	14.24

The association statistics between internet platforms and gender indicated that the utilisation of Skype as a means of internet-based communication was the only platform indicating a statistical difference between males and females (χ^2 (1) = 4.22, p = 0.04). More females (25.32%) than males (12.50%) reported using Skype. Furthermore, statistically significant differences were identified for 'satisfaction' and 'eroticism' as reasons for internet use between males and females. More males (16.07%) than females (6.33%) indicated that they use the internet for satisfaction (Fisher's exact, p = 0.03). This tendency was also observed in terms of eroticism (Fisher's exact, p = 0.03), with more males (8.93%) than females (2.11%) indicating this aspect as a reason for internet use.

4.3 Impact of internet use

Based on the eight constructs that were explored, Table 6 offers a general overview of the impact of internet use on the respondents.

Table 6: Impact of internet use – general overview

Construct	*n*	%
Escape from problems	211	71.53
Loss of control	178	60.34
Withdrawal	139	47.12
Negative effects	125	42.37
Obsession	100	33.90
Introversion	75	25.42
Neglect	52	17.63
Related activities	34	11.56

A large percentage of the respondents indicated that they utilise the internet to escape from their problems (71.53%), and 60.34% indicated that they lose control at some point because of internet use. A relatively small percentage of respondents (17.63%) indicated that they

neglect important tasks and responsibilities because of their internet use. Furthermore, 11.56% disclosed involvement with internet-related activities, such as reading computer magazines.

Apart from calculating the impact of internet use on the respondents, association statistics revealed statistically significant differences between gender and the romantic relationship status of the respondents.

In Table 7 the chi-square test results for the comparison of the eight constructs to the gender of respondents are outlined.

Table 7: Impact of internet use – association according to gender

Construct	*n*	Total %	% Male	% Female	X^2	P
Escape from problems	293	71.67	71.43	71.73	0.002	0.96
Loss of control	293	60.07	66.07	58.65	1.04	0.31
Withdrawal	293	46.76	51.79	45.57	0.70	0.40
Negative effects	293	42.32	44.64	41.77	0.15	0.70
Obsession	293	33.45	46.43	30.38	5.24	**0.02***
Introversion	293	25.26	25.00	25.32	0.002	0.96
Neglect	293	17.41	17.86	17.30	0.01	0.92
Related activities	292	11.64	10.71	11.86	0.06	0.81

* $p \leq 0.05$

As evident from the data in Table 7, the only construct with a significant difference between males and females related to 'obsession' (χ^2 (1) = 5.24, p = 0.02). More males (46.43%) than females (30.38%) presented with signs of obsession with the internet and may therefore be more likely to experience negative emotional effects if they perceive that they are hindered from accessing the internet.

The impact of internet use as it relates to the romantic relationship status of the respondents was also explored (see Table 8).

Table 8: Impact of internet use – association according to romantic relationship

Construct	*n*	Total %	% In romantic relationship	% Not in romantic relationship	X^2	P
Escape from problems	295	71.53	67.68	76.34	2.68	0.10
Loss of control	295	60.34	54.88	67.18	4.60	**0.03***
Withdrawal	295	47.12	48.17	45.80	0.16	0.69
Negative effects	295	42.37	44.51	39.69	0.69	0.41
Obsession	295	33.90	39.02	27.48	4.33	**0.04***
Introversion	295	25.42	21.95	29.77	2.35	0.12

Construct	*n*	Total %	% In romantic relationship	% Not in romantic relationship	X^2	P
Neglect	295	17.63	19.51	15.27	0.90	0.34
Related activities	294	11.56	13.5	9.16	1.34	0.25

* $p \leq 0.05$

Respondents in a romantic relationship differed significantly in terms of the impact of internet use as it relates to 'loss of control' (χ^2 (1) = 4.60, p = 0.03) and 'obsession' (χ^2 (1) = 4.33, p = 0.04). Respondents who were not in a romantic relationship showed a higher tendency to lose control over their internet use (67.18%), as opposed to those in a romantic relationship (54.88%). On the other hand, respondents in a romantic relationship reported a higher tendency for obsession with the internet (39.02%) than those not in a romantic relationship (27.48%).

5. Discussion

The vast majority of the respondents had access to the internet via their mobile phones or laptops. This reflects the global trend of widespread use of the internet (Dhok *et al.*, 2016; Young, 2004). Free Wi-Fi on university campuses is likely to make the internet more accessible to students irrespective of their financial circumstances (Fisher & Harrison, 2013), with the unintended consequence of risk for PIU among the general student population.

The internet was mostly used for extrinsic reasons (e.g. assignments, knowledge and information), with a slightly lower usage for intrinsic reasons (e.g. friendship, boredom and excitement). Extrinsic reasons for internet use might explain the large number of respondents who preferred to use the internet for general searching, downloading, and surfing the WWW. Conversely, intrinsic motivations could be linked to the respondents' preference for internet platforms related to social and communicative purposes (e.g. online chat/messaging and e-mail). The reasons for internet use are relatively similar for males and females. However, males tend to use the internet more often for satisfaction and eroticism, whereas females tend to use Skype significantly more than males. These findings correspond with research by Adiele and Olatokun (2014) who conducted a study on internet use among university students in Nigeria.

The respondents reported low scores on constructs measuring the impact of PIU. This finding corresponds with studies among students in Greece, India, Iran and Mexico (*cf.* Khadzaei *et al.*, 2017; Capetillo-Ventura & Juárez-Treviño, 2015; Kawa & Shafi, 2015; Tsimtsiou *et al.*, 2015; Kalaitzaki & Birtchnell, 2014; Salehi *et al.*, 2014). The present study flagged a relatively high prevalence of two constructs of PIU, namely 'escape from problems' and 'loss of control'. These findings could be related to free and unlimited internet access, extensive periods of free time and social isolation as factors that put students at risk for PIU (Kawa & Shafi, 2015; Salehi *et al.*, 2014; Fisher & Harrison, 2013).

When comparing the constructs of internet use with the romantic relationship status of the respondents, it was flagged that the students who are not in a romantic relationship tend to report "loss of control" significantly more than those in a romantic relationship do. Conversely, respondents in a romantic relationship reported significantly higher on the construct "obsession" than those who are single. Furthermore, males reported significantly higher on the construct

"obsession". In this regard, Chou *et al.* (2005) caution that students could resort to the internet as a coping mechanism to deal with the developmental challenges associated with their life stage and subsequently put the internet in the centre of their university life.

The low scores related to PIU that were reported by the student population in this study could be viewed against a tendency of denial and underreporting of PIU, as well as the fact that PIU is not yet listed in the DSM-5 (Chou *et al*., 2005; Young, 2004). However, as students are a risk group for PIU, the lecturing staff and management at tertiary institutions need to accept responsibility to have policies and services in place to protect student populations who increasingly function in a "fully wired society" (Lenhart *et al.*, 2008 in Christakis, 2010:2).

Tertiary institutions could implement a number of strategies to manage internet use among students. From a BPS perspective, Hatala (2012) and Engel (1997) emphasise that all levels of intervention must pay attention to the biological, psychological, social and cultural domains on an equal basis. Such an approach implies that university policies and services for PIU should be holistic and mandate both preventative and treatment services.

Total abstinence, as often upheld for the treatment of substance use disorders, is not viable in the case of PIU, as the internet has numerous advantages for users and has become a part of people's daily lives (Chakraborty *et al*., 2010). Therefore, harm reduction strategies should be prioritised where the focus is on the mitigation of harm through controlled use of the internet (Van Wormer & Davis, 2013). Among the harm reduction strategies that student support services could promote is that students use a timer and log off once a certain time has lapsed, and to unsubscribe from e-mail list memberships (Van Wormer & Davis, 2013).

Lin *et al.* (2012) and Christakis (2010) advise that preventative services should specifically target vulnerable students with a comorbid diagnosis, as these students tend to use the internet as a coping mechanism. When comparing effective prevention services for both behavioural and chemical addiction, a correlation was identified in terms of the nature of interventions recommended. Environmental (e.g. limited Wi-Fi) and classroom management programmes (e.g. blocking internet access), as well as social and life skills programmes (e.g. time management) are generally suggested (Strang *et al.,* 2012; Wang *et al*., 2012; Young, 2009).

Scholars agree that cognitive behavioural therapy (e.g. recognising and managing triggers for extensive internet use), behavioural strategies (e.g. assertion training, rehearsal and relaxation training), and brief interventions could be effective in teaching students to manage online behaviour (Strang *et al*., 2012; Young, 2009; Chou *et al.*, 2005; Watson, 2005). Group-based interventions, such as support or peer self-help groups, are also recommended (Zafar, 2016:46-47; Strang *et al*., 2012; Chakraborty *et al*., 2010). Student support services can make use of awareness campaigns and seminars targeted at management, lecturing staff and students (Chou *et al*., 2005; Young, 2004).

All tertiary institutions should take responsibility to create a conducive environment for the student population and the above-mentioned strategies could contribute towards such an environment. Such a commitment is embedded in Goals 3 and 4 of the Sustainable Development Goals to which South Africa is a signatory, namely "ensure healthy lives and promote well-being for all at all ages" and "ensure inclusive and equitable quality education … for all" (United Nations, 2015:14).

6. Recommendations

This research was an exploratory study conducted at one tertiary institution and therefore the results cannot be generalised to the South African student population at large. Nonetheless, the following recommendations could be of value for universities countrywide:

- The fact that extensive internet use could lead to PIU and that students are a risk group should be acknowledged, especially as PIU is a hidden variant of addiction. More specifically, lecturing staff and students should be aware of the unintended consequences of the increasing trend towards online teaching and assessment practices.
- Although the current study indicated that the impact of internet use on students is relatively low, the higher education sector should not be complacent about the phenomenon, but use the opportunity to establish prevention and early intervention services.
- Student support services should be holistic and address the biopsychosocial impact of PIU on students, while being sensitive to gender and cultural differences.
- All role players, that is the students as service users, management, lecturing staff and support services, should be involved in a team approach to ensure partnerships and participation of the whole university community. The role players could provide their inputs to assess needs, design interventions, and monitor and evaluate service delivery.
- Ideally, a national survey of internet use should be undertaken to gauge internet use among students in the country. This information could inform the development and evaluation of potential evidence-based interventions relevant to the local realities of the country's diverse student population.

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(Footnotes)

1 Only one item, therefore α could not be calculated.