STUDY PROTOCOL

Identifying and Understanding the Factors of Problematic Pornography Use Among Undergraduate Students: A Mixed-Method Study Protocol

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ABSTRACT

Introduction: Problematic Pornography Use (PPU) is defined as the inability to control pornography consumption to the extent that it disrupts daily life. Despite its growing prevalence, especially among youth, factors contributing to PPU in Malaysia are poorly understood due to ethical, societal, and legal barriers. This study aims to identify and understand the factors contributing to PPU among undergraduate students at a public university by employing the Bio-psychosocial Risk and Protective Factors framework. **Methods:** The study will employ a convergent mixed-methods design. The quantitative phase will involve 568 undergraduate students, selected via stratified proportionate random sampling, using a self-administered survey questionnaire to investigate potential PPU factors. Concurrently, students without PPU who are identified through screening will be invited to participate in in-depth qualitative interviews and photovoice methods to capture their perspectives on protective factors. Quantitative data will be analysed using descriptive statistics and Logistic Regression, while qualitative data will undergo Thematic Analysis. Findings will be integrated throughout the study design, interpretation, and reporting stages. **Conclusion:** Combining qualitative and quantitative methods is expected to provide a comprehensive understanding of factors contributing to PPU among Malaysian undergraduates. The findings may help guide the development of evidence-based policies and programs to address problematic pornography-related issues.

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INTRODUCTION

Pornography consumption has increasingly drawn academic interest, particularly due to its widespread accessibility in modern society. It involves engaging with sexually explicit content across various formats such as videos, images, and literature [1]. Among young adults, pornography use is common and often driven by curiosity and developmental exploration [2,3]. While some individuals use pornography casually, repeated or excessive use may interfere with daily functioning, leading to what has been described as Problematic Pornography Use (PPU).

PPU represents difficulty in regulating pornography consumption despite negative consequences [4]. Although the term 'pornography addiction' is sometimes used, it is not formally recognised in the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5), primarily due to a lack of comprehensive research on its clinical criteria [5–7]. Meanwhile, the World Health Organization (WHO) classifies it under Compulsive Sexual Behaviour Disorder (CSBD) within the International Classification of Diseases 11th Revision (ICD-11) [6,8]. The term PPU has emerged and is increasingly adopted in scholarly literature as a more inclusive and empirically grounded construct that

captures patterns of excessive use without requiring strict diagnostic criteria [9].

PPU among young adults aged 18 to 25 years has become an increasing global concern, with prevalence estimates ranging between 5% and 30% [10–13]. This issue is particularly pressing in Malaysia, which ranks first in Asia and fourth globally for visits to Pornhub, one of the world's largest adult content websites, with 74.5% of Malaysian college students reporting lifetime pornography use [2,14,15]. These figures parallel Western trends, where up to 85% of youths report viewing pornography [3]. Cultural and religious taboos in Malaysia further complicate open discussion of pornography and most research to date remains Western-centric, limiting contextual understanding in Malaysian settings [2,16].

The negative effects of PPU extend beyond the individual, impacting mental health, relationships, and societal dynamics [4,9,11]. PPU can strain intimate relationships by fostering secrecy and eroding trust, leading to impaired communication, isolation and alienation [4,17]. PPU is also associated with risky sexual behaviours, raising concerns about the transmission of sexually transmitted infections and reinforcing harmful gender norms [4,11,17]. Among university students, these effects can disrupt concentration, contribute to emotional distress, and hinder social connectedness [17]. Furthermore, PPU has been linked to increased anxiety, depression, and low self-esteem, exacerbating mental health challenges in university life [9,11]. Understanding modifiable factors linked to PPU is therefore essential for informing targeted interventions.

Initially the Biopsychosocial 4P model was considered for this study as it offers a comprehensive framework for conceptualising predisposing, precipitating, perpetuating, and protective factors [18]. However, its temporal nature was difficult to operationalise due to the predominance of cross-sectional research in the field. Consequently, this study adopts the Biopsychosocial (BPS) Risk and Protective Factors framework, which has been applied in recent research on adolescent psychological wellbeing [19]. Categorising contributing elements into risk and protective factors offers enhanced coding clarity, improves analytical consistency and aligns more closely with current empirical evidence.

Despite the growing awareness of PPU, previous research lacks in-depth exploration, typically focusing on either quantitative or qualitative approaches. Existing research has not sufficiently explored protective factors associated with PPU, particularly within the Malaysian context. This study aims to address these gaps by combining quantitative data with qualitative insights into behaviours, beliefs and contextual influences that help individuals avoid or manage PPU. Protective factors in the qualitative phase include abstinence, reduced frequency of use, effective coping strategies, social and family support, religious beliefs, and exposure to relevant education. Using a convergent mixed-methods design, this study aims to identify and understand the factors influencing PPU among undergraduate students, offering a comprehensive examination grounded in the BPS Risk and Protective Factors framework.

MATERIALS AND METHODS

Study Design

This study will utilise a mixed-methods approach, specifically the convergent mixed-methods design. In this design, the researcher will collect and analyse two distinct datasets—one quantitative and one qualitative—before merging them to compare or combine the results [20]. Figure 1 illustrates the conceptual framework guiding this research. Two factors, namely education level and diversity of pornography consumption, will not be investigated in this study. Education level is excluded due to sample homogeneity (all undergraduate students), limiting its variability as a meaningful factor. Meanwhile, diversity of pornography consumption is omitted due to its highly sensitive nature, which could raise discomfort and ethical concerns. By exploring the other factors within this framework, the study seeks to inform targeted interventions and educational initiatives to reduce PPU's prevalence and mitigate its negative impact on young adults.

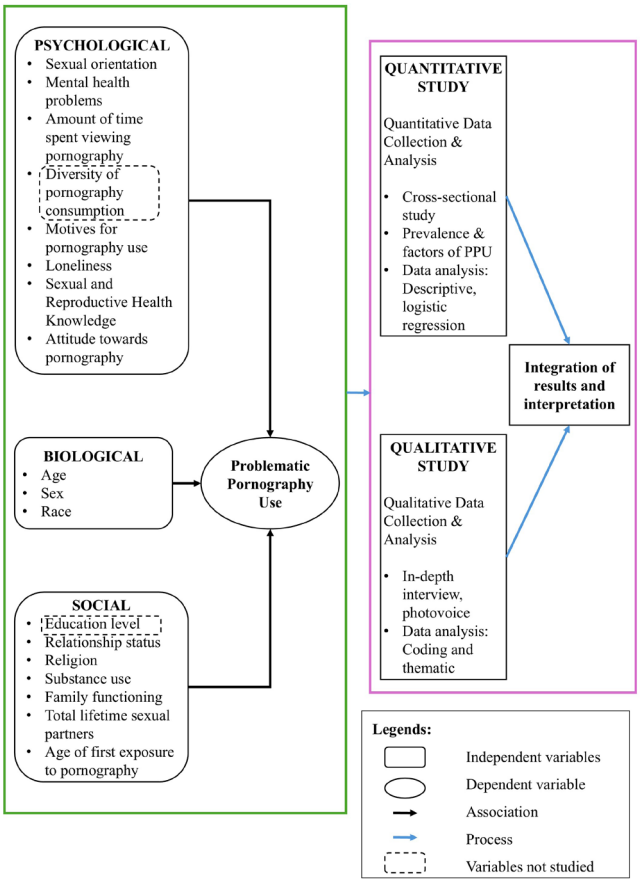

Fig. 1 Conceptual Framework of Convergent Mixed-Methods Study Design on Factors Associated with Problematic Pornography Use

Data collection for both the quantitative and qualitative components occurs concurrently but separately (see Figure 2). The convergent mixed-methods design leverages the strengths of both quantitative and qualitative methods, facilitating a thorough exploration and validation of the research problem. Through integration during the selection, interpretation, and discussion phases, this study aims to provide a comprehensive understanding of the research issues. This design was chosen because it allows for a more holistic understanding of PPU by integrating quantitative data on risk factors with qualitative insights into protective factors, thereby providing both breadth and depth in addressing the research objectives.

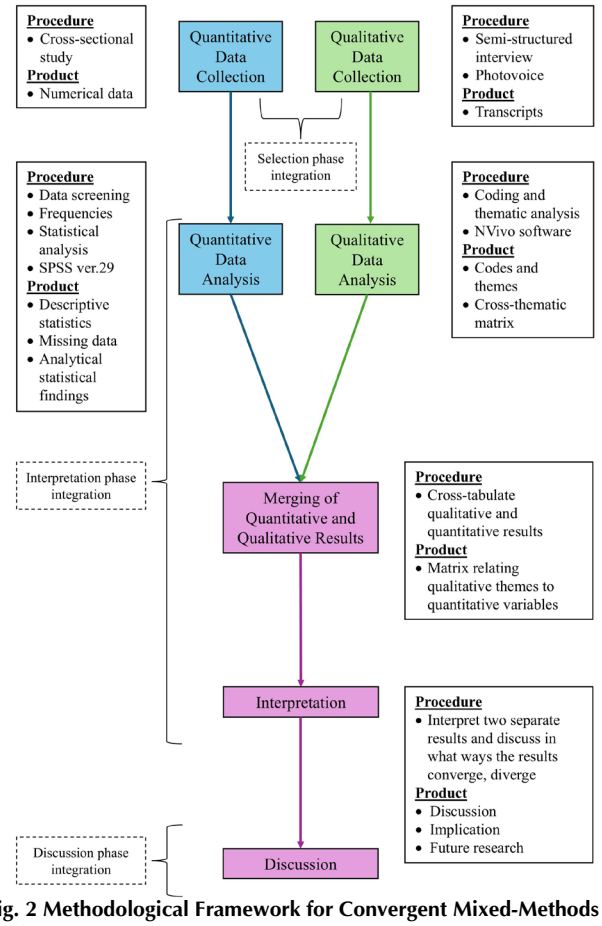

Fig. 2 Methodological Framework for Convergent Mixed-Methods Study Design

Setting

The study will be conducted on main campus of a public university in Selangor, Malaysia. The campus hosts a diverse student population with varying backgrounds, ethnicities, and academic disciplines, making it an ideal setting for gathering valuable insights. This diversity will support the study's objective of investigating and understanding the factors influencing PPU among young adults.

Sampling Population

The sampling population will consist of undergraduate students from all faculties and schools on the main campus of the university who meet the inclusion and exclusion criteria. Undergraduate students were specifically chosen because they represent a population that is developmentally more vulnerable to online sexual content exposure and at higher risk of developing PPU, given their unique challenges during the transition to adulthood [3].

Inclusion and Exclusion Criteria

The inclusion criteria for the respondents will be Malaysian students enrolled in consented faculties and schools on the main campus of the university, aged 18–25 years, regardless of sex. Students from faculties on the branch campus and those who are not physically present during the study period will be excluded from the study.

Sample Size

For the quantitative phase, the sample size will be calculated using the two-proportion formula. Considering multiple variables identified in previous studies, the highest estimated sample size of 468 respondents is based on age-related variables [11]. After adjusting for an anticipated 25% non-response rate, the final sample size (n) will be 568 respondents [12]. For the qualitative phase, a minimum of 12 participants was estimated based on recommendations from qualitative research literature, which suggest that 10 to 15 interviews are typically sufficient to achieve data saturation in focused and relatively homogeneous study populations [21]. Data collection will continue until no new information emerges that contributes to forming new themes related to the research questions, ensuring adequate depth and richness of the data.

Sampling Method

The researcher will employ a stratified proportionate random sampling method for the quantitative phase of the study. Faculties and schools will be classified into distinct strata. The sampling frame comprises all registered undergraduate students in each participating faculty or school, obtained from administrative records. The sample size for each stratum will be calculated proportionally from its total population size, based on the estimated sample size relative to the overall population. Respondents within each stratum will be selected using a simple random sampling method, with a random number generator ensuring that each individual has an equal chance of being chosen.

For the qualitative phase, a purposive sampling method will be used, which is suitable for obtaining in-depth information from participants to answer the research questions. The qualitative phase will run concurrently with the quantitative phase. Using a screening tool, the researcher will selectively choose and invite respondents who do not have PPU for targeted and in-depth interviews and photovoice activities to explore the protective factors of the phenomenon. These participants are intentionally selected to explore protective factors,

whether personal, behavioural, or environmental characteristics that help them avoid developing PPU. Understanding the experiences and perspectives of these students without PPU is essential for identifying the factors that may buffer against or prevent PPU, which is a key objective of the study.

Data Collection

In the quantitative phase, self-administered questionnaires will be used for data collection. The questionnaire will be distributed either physically or online to selected respondents. Respondents will only require approximately 15 minutes to complete the questionnaire. Informed consent will accompany the questionnaire, outlining the study's purpose, confidentiality and voluntary participation. To reduce social desirability bias when reporting sensitive behaviours, the questionnaire will be fully anonymous, completed independently and accompanied by clear assurances of confidentiality. Neutral and non-judgemental wording will be used to encourage honest responses. Completed questionnaires will then undergo data entry, cleaning and analysis. The quantitative phase is scheduled to take place from June 2025 to June 2026.

In the qualitative phase, semi-structured interviews will be employed to explore the experience of the students. Interviews will be conducted either in-person or online (such as Google Meet or Zoom), which is convenient for the participants. Written and verbal informed consent will be collected prior to interview session, where detailed explanation of the study will be given, emphasizing confidentiality, their right to withdraw at any time, and the voluntary nature of their participation. The location of in-person interviews will be chosen based on participants' preferences for convenience and comfort for both parties. This approach is particularly advantageous for discussing sensitive topics, as it allows for observation of non-verbal cues and creates an environment conducive to open and honest communication. Qualitative data collection is anticipated to occur from June 2025 to June 2026.

Study Instruments

The questionnaire for the study will be developed by adapting items from past research. It will be administered in English, and no translation will be required. For quality control, the content and face validity of the questionnaire will be reviewed by experts before conducting a pretest among a similar population. Cronbach's alpha will be used to assess the internal consistency and reliability of the questionnaire [22]. The questionnaire will be divided into four sections (Biological, Psychological, and Social factors, and PPU) to measure different variables. The BPS factors serve as the independent variables, while PPU is the dependent variable.

Biological factors

Age, reported in years based on the respondents' year of birth. Sex will be specified as either male or female, are included. Race will be categorized as Malay, Chinese, Indian, or Others.

Psychological factors

Sexual orientation will be categorized as heterosexual, homosexual, bisexual, or undefined. Mental health problems, such as anxiety, stress, depression, phobic disorder, or none, will be assessed based on any diagnosed mental health issues faced by the respondents diagnosed by professionals. The average amount of time spent viewing pornography per day will be questioned. The motives for pornography use among respondents will be assessed using a scale of 1 (never) to 7 (all the time) for options such as boredom, curiosity, emotional avoidance, and sexual arousal [23]. Loneliness will be evaluated using De Jong Gierveld Loneliness Scale, comprising 11 items scored as 'yes', no' or 'more or less' [17]. A total score of three and above indicates loneliness. The scale is a validated and reliable assessment for overall, emotional, and social loneliness (Cronbach's alpha = 0.73) [17]. Respondents' sexual and reproductive health knowledge will be assessed using 12 items adapted from a study, validated with a Cronbach's alpha of 0.761 [24]. A 20-item scale will be adapted to assess the attitude towards pornography [25]. Respondents' responses will be recorded on a 7-point scale from 1 (strongly disagree) to 7 (strongly agree), where higher total score indicates more positive attitudes toward pornography. The reliability of the scale was 0.84 to 0.87, with satisfactory psychometric property with Cronbach's alpha of 0.74 [12].

Social factors

Relationship status will be classified as either in a relationship or not in a relationship. Religion will be categorized as Islam, Christianity, Hinduism, Buddhism, or Others. Respondents will be queried about any substance use, including alcohol and illicit drugs. Additionally, respondents will be asked about their total lifetime sexual partners and age of first exposure to pornography in this section. Family functioning questions will be using McMaster Family Assessment Device-General Functioning Subscale [26]. Respondents will be required to answer 12 items using a 4-point scale ranging from 1 (strongly disagree) to 4 (strongly agree). All odd number items are negative items and reverse scored. The higher the score, the healthier the family functioning. The Cronbach's alpha of this scale was 0.752 [27].

Problematic Pornography Use

Self-reported questionnaire on PPU utilising the Problematic Pornography Consumption Scale (PPCS) developed in 2017 [28]. It consists of 18 items covering six factors: salience, mood modification, conflict, tolerance, relapse, and withdrawal. Respondents will rate the questionnaire on a seven-point scale ranging from 1 (never) to 7 (all the time). The total score will be

computed, with a score of 76 points or above indicating possible PPU. The PPCS demonstrates high reliability, exhibiting strong psychometric properties across diverse samples, including young adults and adolescents, and displaying high internal consistency (Cronbach's alpha = 0.93) [28,29].

In the qualitative phase, semi-structured interviews will be used, considered to be the most suitable method due to their advantages, allowing respondents to voice their opinions without fear, while the interviewer can control the direction of the study. The interview will be guided by a set interview guide containing leading and probing questions tailored to the research questions, aiming for a comprehensive understanding of participants' perspectives on PPU. The interview guide was developed by the researcher in consultation with subject matter experts to ensure content relevance and clarity. All interviews will be conducted by the researcher, who has been trained in qualitative interviewing techniques to ensure consistency, sensitivity, and ethical handling of participants. Additionally, the researcher will employ the photovoice method, enabling participants to visually represent their experiences and perspectives related to protective factors for PPU. Clear ethical and privacy guidelines for photo-taking will be provided to ensure participants' comfort and confidentiality. This approach enriches the qualitative data obtained from interviews by adding a visual dimension to participants' narratives.

Data Analysis

For quantitative phase, data will be collected and analysed using Statistical Package of Social Sciences System (SPSS) version 29.0 software. Descriptive analysis will be conducted to check for any errors, missing data, and to describe the data. Frequency, percentage, mean, and standard deviation will be used to present descriptive statistics of variables. Normality tests will be performed prior to any inferential statistical analysis. For bivariable analysis, such as the Chi-square test and Logistic Regression test, will be used to measure the association between independent variables and the dependent variable. Independent variables with a p-value <0.25 in bivariable analysis will be proceeded to multivariable analysis, such as the Multiple Logistic Regression test, to determine the predictors for PPU. A significant level (α) of 0.05 with a 95% confidence interval will be used for all statistical tests.

In the qualitative phase, the researcher will manually transcribe interview recordings to generate full and accurate transcripts, maintaining participants' original language during analysis and interpretation. Specific verbatim quotes will be used in the discussion to ensure accuracy and context. For the photovoice method, images taken by participants will represent their experiences or perspectives. Photovoice images and their accompanying narratives will be analysed alongside interview transcripts during the thematic analysis process. Codes generated from the photovoice data will be compared and integrated with interview-derived codes to identify convergent or complementary themes. This systematic integration allows visual and verbal data to inform one another, strengthening theme development and supporting credibility of the findings. Thematic analysis, which is commonly applied to qualitative data, will be used to identify patterns related to the research questions and will follow the six phases outlined in Table I [30]. To ensure trustworthiness, the study will involve prolonged engagement with participants, member checking for interpretation confirmation, and the use of thick descriptions to enhance applicability across different contexts. An audit trail will document each research step for transparency, complemented by regular feedback from the supervisory committee to support the validity of the findings.

Table I. Steps of thematic analysis

No	Phase	Description
1	Familiarization	Data transcription. Extract data from the transcript reading and re-reading.
2	Initial Coding	Systematic coding with supporting data.
3	Identifying Themes	Merging codes to form potential themes.
4	Reviewing Themes	Review themes to answer the research questions. Generate a thematic 'map'of the analysis.
5	Refining Themes	Refining themes to be clear and specific.
6	Producing Report	Selection of extract for discussion in the study.

Ethical Consideration

This study has received ethical approval from the Ethics Committee for Research Involving Human Subjects of Universiti Putra Malaysia (JKEUPM) (Ref. No.: JKEUPM-2024-668). The researcher will adhere to the principles of the Declaration of Helsinki and the Malaysian Good Clinical Practice Guidelines.

Respondents identified with possible PPU will be offered behavioural counselling or treatment options and referred to the nearest health clinic or counseling division for further assistance and support. This proactive approach aims to ensure that respondents receive appropriate interventions tailored to their needs, thereby addressing any identified concerns related to PPU and promoting their overall well-being.

Some of the sensitive questions related to PPU may cause discomfort for respondents, though it is not expected to exceed everyday experiences. This potential discomfort will be highlighted in the information sheet prior to obtaining consent, allowing participants to withdraw at any time. All information will remain strictly confidential and will be stored in a password-protected database linked to unique study identification numbers.

Identifiable information on data sheets and transcripts will be replaced with subject codes or pseudonyms. Audio recordings and images will be encrypted, labeled non-identifiably, and used only for transcription and analysis. After verification, all data will be securely deleted. Respondents will not have direct access to their personal data, which will be stored in a comprehensive database accessible only to study personnel and relevant authorities.

RESULTS

The quantitative analysis is expected to identify key risk factors associated with PPU among undergraduate students. Descriptive statistics will likely provide an overview of PPU prevalence and characteristics within the sample, while bivariable and multivariable analyses may help determine the most significant predictors. The final logistic regression model is anticipated to suggest the more influential risk factors, which could offer a clearer understanding of the variables that increase susceptibility to PPU.

In contrast, the qualitative phase aims to explore protective factors that may help students avoid or manage PPU. Interviews and photovoice data are expected to provide in-depth insights into participants' perceptions, experiences, and the underlying reasons behind these protective factors. By integrating findings from both phases, the study intends to compare and combine the identified risk and protective factors to inform a more comprehensive understanding of PPU, with the goal of identifying potential areas for future intervention and prevention strategies.

DISCUSSION

Understanding PPU and its associated factors in Malaysia is essential for gaining insights into its prevalence and tailoring interventions to the country's unique cultural dynamics. This research moves beyond generalized findings from Western contexts, acknowledging Malaysia's distinctive societal nuances. By applying a convergent mixed-methods approach, this study will provide a more nuanced understanding of PPU among Malaysian undergraduates, capturing both measurable predictors and lived experiences.

The findings will significantly benefit academic knowledge, future research and serve as a foundation for developing culturally relevant mental health and public health interventions. Insights generated are essential for crafting strategies to mitigate the adverse effects of PPU and can serve as a benchmark for assessing improvements in preventive practices. Interventions may focus on educating young people about healthy sexual attitudes, fostering impulse control and promoting effective coping mechanisms. Identifying risk and protective factors through the Biopsychosocial Risk and Protective Factors framework will guide future prevention and rehabilitation efforts. Interventions may include psychoeducation, mental health support, and relationship-based strategies to mitigate negative outcomes.

For universities and the Ministry of Higher Education (MOHE), the findings may inform evidence-based policies that enhance student wellbeing and create safer learning environments. This aligns with national priorities and broader public health goals, including SDGs related to health, education, and inequality. Additionally, the Ministry of Health may also use the findings to strengthen public health initiatives addressing PPU-related challenges among young adults.

Several limitations are acknowledged. The cross-sectional design of the quantitative phase limits the ability to infer causality, as temporal relationships between risk factors and PPU cannot be established. Reliance on self-reported data may introduce recall or social desirability bias. To minimise social desirability bias within this study, anonymity, private questionnaire completion and neutral question wording will be implemented; however, some degree of underreporting may still occur due to the sensitive nature of the topic. Generalisability may be limited to similar institutional contexts. Additionally, the exclusion of variables such as diversity of pornography use restricts exploration of potentially important determinants and may narrow the interpretation of findings, particularly for populations with varied consumption patterns. Future studies could adopt enhanced confidentiality measures, anonymous digital survey formats or indirect questioning techniques to safely capture a wider range of pornography use, and consider longitudinal designs to improve causal inference.

Despite these limitations, the study is expected to provide meaningful insights into the prevalence, predictors, and protective factors associated with PPU, addressing key gaps in Malaysian literature and supporting the development of targeted, culturally aligned interventions for young adults.

CONCLUSION

Combining qualitative and quantitative methods is expected to enhance understanding of factors related to PPU among undergraduate students based on the Biopsychosocial Risk and Protective Factors framework. The outcomes derived from this approach could provide valuable direction for developing a comprehensive programme aimed at addressing pornography-related issues.

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