Needs Analysis for the Development of a Cognitive Behavioural Therapy-Based Group Guidance Module to Address E-Cigarette Use Among Secondary School Students in Johor

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ABSTRACT

E-cigarette use among secondary school students poses challenges to guidance and counselling services particularly in providing systematic and structured interventions. This study aimed to identify the perceived need for developing a Cognitive Behavioural Therapy (CBT)-based e-cigarette intervention module from the perspective of secondary school Guidance and Counselling Teachers in Johor. This quantitative study used a descriptive survey design and involved 75 Guidance and Counselling Teachers. Data were collected online using a needs analysis questionnaire and analysed using descriptive statistics. All respondents reported that they had handled cases involving students who used e-cigarettes. Based on respondents' observations and experience in handling these cases, peer influence (94.7%) was the most frequently identified factor followed by curiosity (88.0%). In addition, 76.0% of respondents identified difficulty controlling the urge to use e-cigarettes as one of the issues faced by students. In terms of intervention needs, respondents expressed support for the development of a CBT-based e-cigarette intervention module for use by Guidance and Counselling Teachers (M = 4.53, SD = .600) and agreed on its importance in improving the effectiveness of guidance and counselling services (M = 4.51, SD = .665). Respondents also agreed on the need for knowledge about CBT-based modules (M = 4.33, SD = .664) and for systematic and structured CBT guidance (M = 4.29, SD = .749). Overall, the findings show support among respondents for module development and provide initial input from school practitioners on intervention aspects that may be considered in developing the module. Further research is recommended to develop, validate, and test the effectiveness of a CBT-based group guidance module among secondary school students who use e-cigarettes.

Keywords: needs analysis; group guidance; Guidance and Counselling Teachers; e-cigarettes; Cognitive Behavioural Therapy

INTRODUCTION

E-Cigarette Use Among Adolescents

E-cigarette use among adolescents is receiving increasing attention in public health and education. According to the National Health and Morbidity Survey (NHMS) 2022, the prevalence of current e-cigarette use among adolescents aged 13 to 17 years in Malaysia was 14.9% (Institute for Public Health, 2022). In addition to the NHMS 2022 findings, data from the Student Discipline System (Sistem Sahsiah Diri Murid, SSDM), Ministry of Education Malaysia, showed that the number of students involved in e-cigarette use increased from 16,038 in 2023 to 19,450 in 2024 (Jawatankuasa Pilihan Kesihatan Dewan Rakyat, 2025). These findings suggest that e-cigarette use among adolescents is a concerning issue that requires ongoing attention, especially in secondary school settings.

E-cigarette use among adolescents is a concern because exposure to nicotine can increase the risk of dependence and make quitting more difficult. In addition, e-cigarette use has been associated with mental health problems such as depression, anxiety, and stress among adolescents and young adults (Becker et al., 2021). This suggests that e-cigarette use may go beyond experimentation and develop into an issue involving dependence and psychological well-being, which may require earlier and more focused intervention.

Previous studies show that adolescent e-cigarette use is often related to social and environmental influences. Villanueva-Blasco et al. (2025) found that peers, family members, social acceptance and flavour appeal were among the factors frequently associated with e-cigarette use among adolescents. Similar findings were reported by Ling et al. (2023), who found that peer and parental influence as well as easy access to e-cigarette products were associated with e-cigarette use among adolescents.

School-Based Interventions and the Role of Guidance and Counselling Teachers

Schools are important settings for prevention and intervention efforts related to adolescent e-cigarette use. Gardner et al. (2024) found that school-based interventions may improve knowledge, attitudes, and intentions related to e-cigarette use. The study also highlighted the need for evidence-based interventions, especially programmes that have a theoretical basis and include skills training for students.

In these efforts, Guidance and Counselling Teachers play an important role in supporting students through prevention, early intervention and behaviour change support. Leavens et al. (2023) showed that school counsellors were also included in school teams that received training and support to carry out prevention and intervention efforts related to adolescent e-cigarette use. This highlights the importance of suitable knowledge, skills and intervention guidance to help Guidance and Counselling Teachers manage e-cigarette use in a more organised way.

Several smoking cessation modules have been developed in Malaysia, including the Smoking Cessation Behavioural Intervention Training Module (Ministry of Health Malaysia, 2012) and the Speak Out Smoking Cessation Module (Ministry of Health Malaysia, 2020). However, both focus more on conventional cigarette smoking cessation. A specific e-cigarette intervention, MyQUITVAPE was developed for university students using a health education approach (Siau et al., 2025). This shows that there is still room to develop a structured Cognitive Behavioural Therapy (CBT)-based group guidance module specifically for secondary school students who use e-cigarettes.

Suitability of Cognitive Behavioural Therapy and Group Guidance

Cognitive Behavioural Therapy (CBT) was selected as the basis for the proposed intervention because it focuses on the relationship between thoughts, emotions and behaviours (Beck, 2011) that may influence substance use. Beck et al. (1993) explained that thoughts related to substance use, high-risk situations and the urge to use a substance can influence substance use behaviour. Cognitive and behavioural interventions help individuals identify triggers and develop more suitable coping strategies.

More recent literature on adolescent vaping also supports the relevance of cognitive and behavioural components. Becker (2024) explained that individual or group-based CBT can help young people identify patterns and triggers of use, develop strategies to cope with cravings and practise refusal skills when facing peer influence. Schuster et al. (2023) similarly included trigger identification, management of strong urges, coping with social pressure and stress and lapse and relapse management in a behavioural counselling protocol developed for adolescent vaping cessation. In addition, Graham et al. (2024) found that an adolescent vaping cessation intervention incorporating cognitive and behavioural coping-skills training and social support resulted in higher abstinence rates than an assessment-only control condition. Together, this literature supports the consideration of cognitive and behavioural strategies in interventions addressing adolescent e-cigarette use.

Group guidance may also offer a suitable format within school guidance and counselling services because it can be delivered in a structured way and gives students opportunities to gain knowledge, increase self-

awareness, and develop skills through interaction with group members. According to Gladding (2020), group guidance or psychoeducational groups emphasise the delivery of information, discussion and active participation to improve understanding and skills. Brown (2018) also explained that the group process provides participants opportunities to understand the issues they face, obtain information and learn from the experiences of other group members.

The proposed group guidance format may also be considered a practical school-based approach for delivering structured cognitive and behavioural skills. Previous research has used school-based cognitive-behavioural group counselling with adolescents in nicotine cessation interventions. Bailey et al. (2013), for example, implemented school-based cognitive-behavioural group counselling for adolescent smokers with the intervention focusing on cessation-related skills within a structured group format. In addition, adolescents themselves have reported a preference for school-based vaping cessation programmes that include skills for managing stress, relaxation and other challenges related to quitting (Bold et al., 2022). These findings provide support for considering a structured group format in the development of a school-based CBT intervention for adolescents.

Needs Analysis in Module Development

Developing an intervention module requires a clear understanding of user needs, implementation challenges and the actual context in which the module will be used. Needs analysis is a systematic process that helps identify needs, set priorities and provide information for more appropriate action planning (Witkin & Altschuld, 1995; Altschuld & Kumar, 2010). In module development, needs analysis can also provide an empirical basis for identifying problems faced by users and needs that should be considered before a module is developed (Idrus et al., 2026).

In this study, the views of Guidance and Counselling Teachers are important because they are directly involved in handling cases of e-cigarette use among students. Their observations and experience in handling cases can provide information about factors and issues identified among students, challenges in handling cases, interventions used and views on the need for a more structured approach. This information provides a picture of intervention needs from the perspective of Guidance and Counselling Teachers in school practice and can serve as initial input for developing a CBT-based group guidance module.

Research Objectives

1. To identify factors related to e-cigarette use among secondary school students based on the observations of Guidance and Counselling Teachers.
2. To identify the experiences and challenges of Guidance and Counselling Teachers in handling cases of e-cigarette use.
3. To identify the interventions used by Guidance and Counselling Teachers and their perceptions of the effectiveness of these interventions in addressing e-cigarette use.
4. To identify the perceptions of Guidance and Counselling Teachers regarding the need to develop a systematic and structured CBT-based group guidance module.

METHODOLOGY

Research Design

This study used a quantitative approach with a descriptive survey design to conduct a needs analysis for module development. The design was used to obtain the views of Guidance and Counselling Teachers on factors related to e-cigarette use among students, their experiences and challenges in handling cases, interventions used and their perceived need for the development of a Cognitive Behavioural Therapy (CBT)-based group guidance module.

Research Respondents

This study involved 75 Guidance and Counselling Teachers serving in secondary schools in Johor. A non-probability sampling approach was used to obtain responses from the target professional group through an online questionnaire and participation was voluntary. The respondents represented 11 districts across Johor and different types of secondary schools.

In terms of respondent characteristics, 88.0% were female and 54.7% were aged between 41 and 50 years. Most respondents held a bachelor's degree (78.7%) while 20.0% held a master's degree. In addition, 61.3% had served as Guidance and Counselling Teachers for 16 years or more. Respondents were almost equally distributed between urban (50.7%) and rural (49.3%) schools.

Research Instrument

Data were collected using a researcher-developed needs analysis questionnaire designed specifically to address the objectives of this study and the context of secondary school guidance and counselling services. The questionnaire was developed to obtain respondents' professional observations and experiences regarding e-cigarette use among students, challenges in handling related cases, existing intervention practices and perceived needs for the development of a CBT-based group guidance module.

The questionnaire included a respondent demographic section and four main sections:

1. Understanding, experience, factors related to use and issues observed among students who use e-cigarettes;
2. Experience and challenges of Guidance and Counselling Teachers in handling cases;
3. Existing intervention practices and perceptions of their effectiveness; and
4. Perceived need for the development of a CBT-based intervention module.

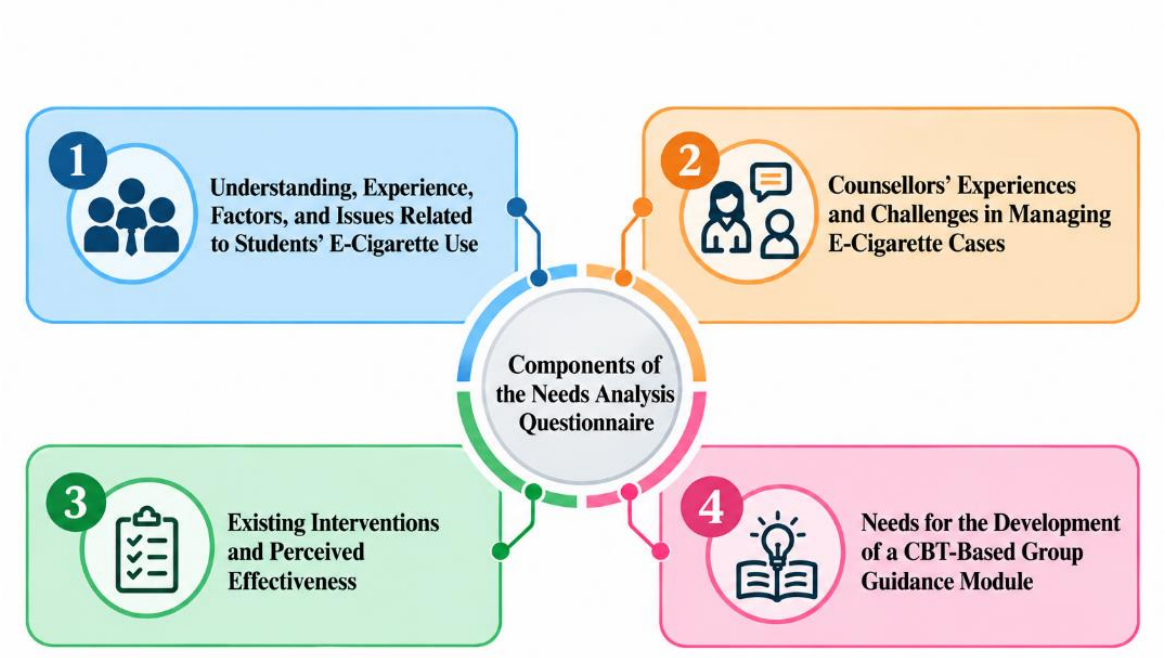

Figure 1. Components of the needs analysis questionnaire

Figure 1 shows the four main components included in the needs analysis questionnaire used in this study. The questionnaire used a combination of five-point Likert-scale items, single-response items, multiple-response items, and open-ended questions.

Data Collection Procedure

Data were collected online during July 2026 using Google Forms. The questionnaire was distributed to Guidance and Counselling Teachers serving in secondary schools in Johor and participation was voluntary. Respondents provided feedback based on their professional observations and experiences in handling e-cigarette-related cases and their views on intervention needs within school guidance and counselling services.

Data Analysis

The data were analysed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics, including frequency, percentage, mean and standard deviation, were used to analyse the questionnaire data. Frequencies and percentages were used to describe respondent characteristics, factors related to e-cigarette use, the experiences and challenges of Guidance and Counselling Teachers and existing intervention practices. Means and standard deviations were used to summarise responses to Likert-scale items, particularly those related to the perceived need for a CBT-based group guidance module. Responses to the open-ended questions were reviewed descriptively and grouped according to recurring issues to provide supplementary context for the quantitative findings.

RESULTS

This study involved 75 Guidance and Counselling Teachers from secondary schools in Johor. The findings are presented according to four main areas of the needs analysis, factors and issues related to e-cigarette use among students, the experiences and challenges of Guidance and Counselling Teachers, existing interventions and the perceived need for the development of a CBT-based group guidance module.

Factors and Issues Related to E-Cigarette Use

Respondents' experiences show that e-cigarette use is an issue encountered in school guidance and counselling practice. All respondents reported that they had handled cases involving students who used e-cigarettes with 70.7% selecting “strongly agree” and 29.3% selecting “agree” for this statement.

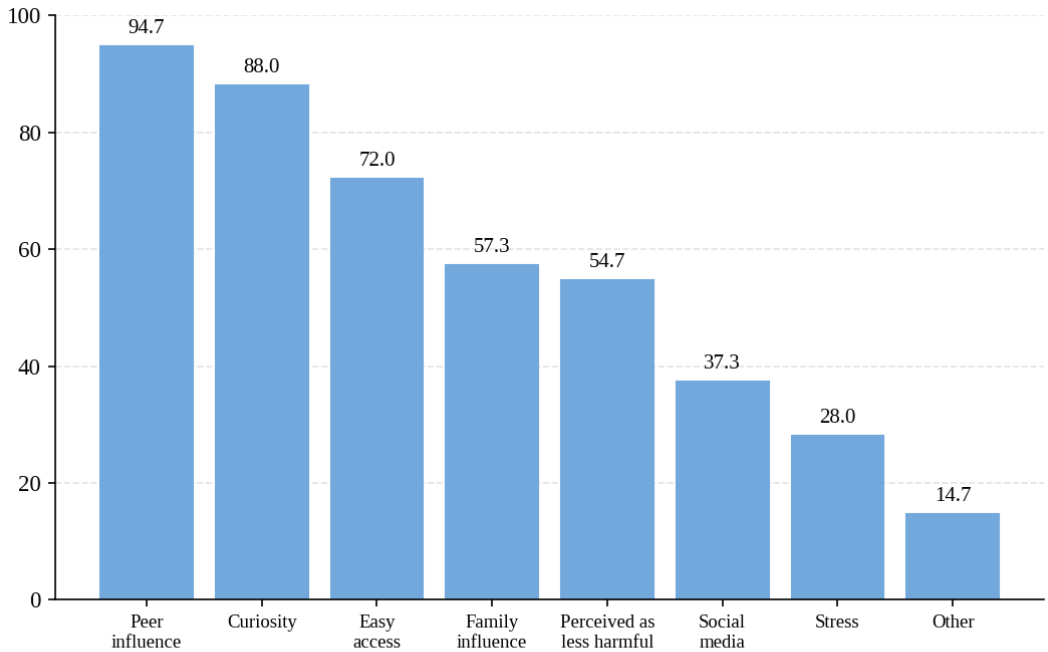

Figure 2. Factors related to e-cigarette use among students

For factors related to e-cigarette use, respondents could select more than one answer based on their observations and experience in handling student cases. A total of 94.7% of respondents identified peer influence as a factor related to e-cigarette use, followed by curiosity (88.0%) and easy access to e-cigarettes (72.0%). Other factors identified by respondents included family influence (57.3%), the perception that e-cigarettes are less harmful than conventional cigarettes (54.7%), the influence of social media and advertising (37.3%) and stress (28.0%).

No.	Main issue	Percentage (%)
1	Difficulty controlling the urge to use e-cigarettes (craving)	76.0
2	Involvement in school disciplinary violations	64.0
3	Returning to e-cigarette use after trying to quit	54.7
4	Nicotine dependence	32.0
5	Easily discouraged when facing challenges to quit	30.7
6	Low confidence to quit	28.0
7	Emotional problems related to e-cigarette use	21.3
8	Difficulty coping with stress without using e-cigarettes	20.0

Table 1. Main issues related to e-cigarette use among students

Based on respondents' observations and experience in handling cases, the most frequently identified issues among students who used e-cigarettes were difficulty controlling the urge to use e-cigarettes (76.0%), involvement in school disciplinary violations (64.0%) and returning to e-cigarette use after trying to quit (54.7%). Respondents could select more than one answer for this item.

Experiences and Challenges of Guidance and Counselling Teachers

Respondents' experiences show that the number of e-cigarette cases varied between schools. A total of 28.0% of respondents reported 6 to 10 cases per year followed by 25.3% who reported 11 to 20 cases. In addition, 26.7% reported 0 to 5 cases per year, 8.0% reported 21 to 30 cases and 12.0% reported more than 30 cases per year.

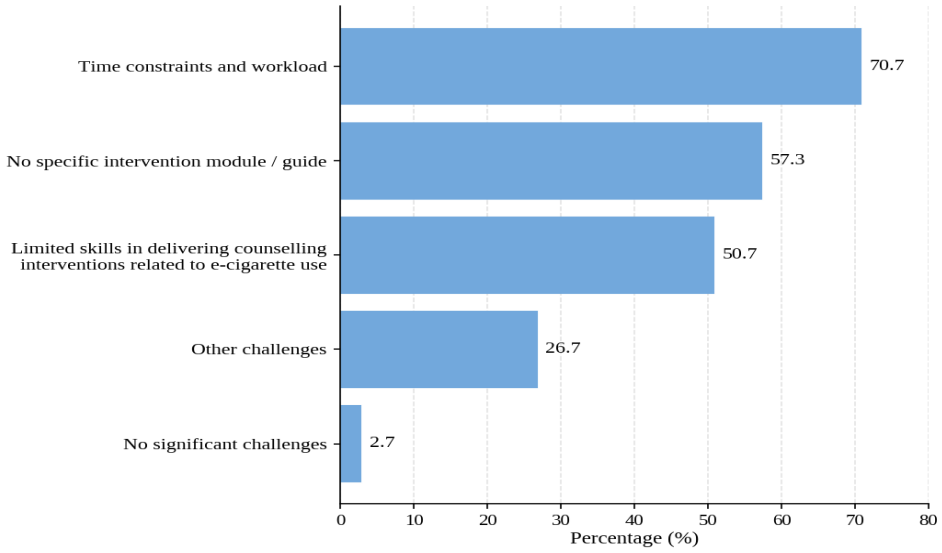

Figure 3. Challenges faced by Guidance and Counselling Teachers in addressing e-cigarette use

For the item on challenges, respondents could select more than one answer. The most frequently reported challenge was time constraints and workload (70.7%), followed by the absence of a specific intervention module or guide based on a particular counselling approach or theory (57.3%), and limited skills in implementing counselling interventions related to e-cigarette use (50.7%).

Based on respondents' assessment of the cases they handled, Form 3 students had the highest mean ranking score for involvement in e-cigarette use (M = 3.51), followed by Form 4 (M = 3.49), Form 5 (M = 3.29), Form 2 (M = 3.05), and Form 1 (M = 1.65).

A higher score indicates more frequent involvement based on the ranking provided by respondents. These scores reflect respondents' experience and do not represent the prevalence rate of e-cigarette use for each form level.

Existing Interventions and Perceptions of Their Effectiveness

Guidance and Counselling Teachers reported using various forms of intervention to address e-cigarette use in schools. Respondents could select more than one answer for this item. The most commonly used interventions were individual counselling sessions and school prevention programmes both at 88.0%, followed by group counselling sessions (80.0%) and collaboration with external agencies (72.0%). Individual guidance sessions and group guidance sessions were also used by 61.3% and 57.3% of respondents respectively.

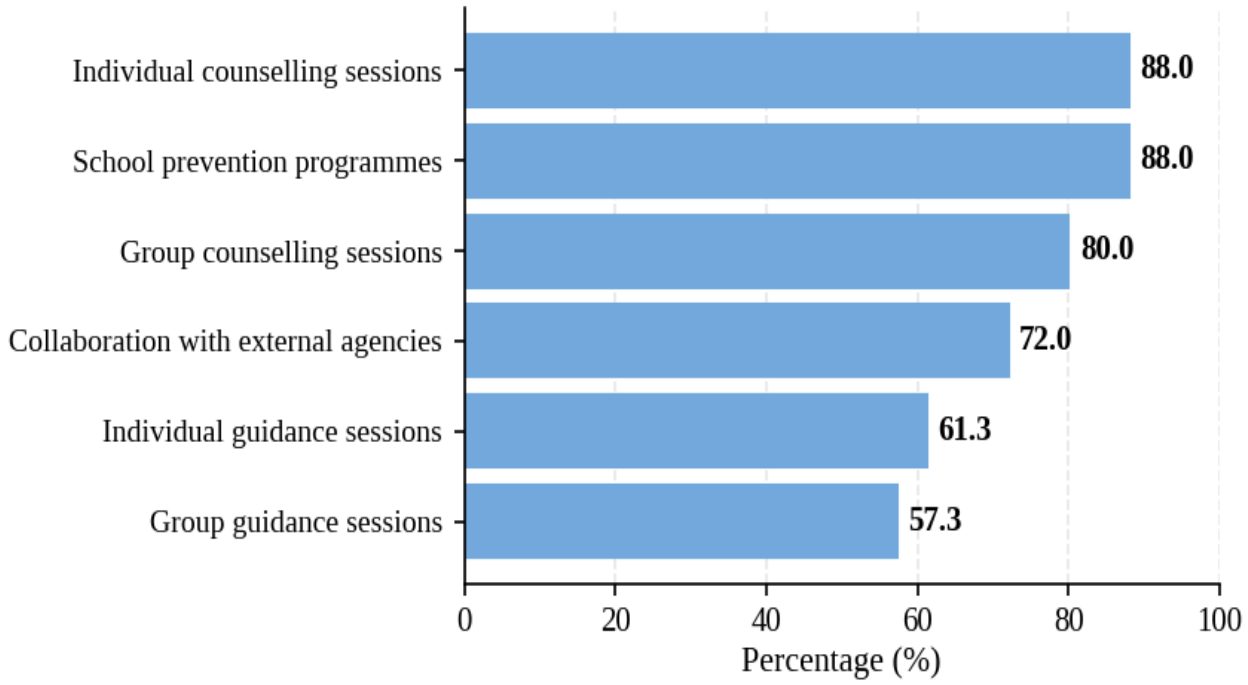

Figure 4. Existing interventions used by Guidance and Counselling Teachers

In terms of perceived effectiveness, 49.3% of respondents stated that the existing strategies still needed improvement, while 30.7% rated them as less effective. A total of 18.7% rated the strategies as effective and 1.3% rated them as ineffective.

Perceived Need for the Development of a CBT-Based Module

The findings showed that respondents expressed support for the development of a CBT-based module. A total of 94.7% of respondents supported the development of a CBT-based e-cigarette intervention module for use by Guidance and Counselling Teachers (M = 4.53, SD = .600). Respondents also agreed that the module would be important for improving the effectiveness of guidance and counselling services (M = 4.51, SD = .665).

Item	Agree + Strongly Agree, n (%)	Mean	SD	Summary of Findings
Need knowledge about a CBT-based intervention module.	69 (92.0)	4.33	.664	Shows a clear need for knowledge about the module.
Need systematic and structured CBT guidance.	68 (90.7)	4.29	.749	Shows a clear need for intervention guidance.
A CBT module is important for improving the effectiveness of guidance and counselling services.	68 (90.7)	4.51	.665	Shows positive acceptance of module development.
A CBT-based intervention module should be developed for Guidance and Counselling Teachers.	71 (94.7)	4.53	.600	Shows support for module development.

Table 2. Perceived need for the development of a CBT-based module

In addition, 92.0% of respondents agreed on the need to gain knowledge about a CBT-based intervention module (M = 4.33, SD = .664), while 90.7% agreed on the need for systematic and structured CBT guidance (M = 4.29, SD = .749). Overall, the findings show support among the participating Guidance and Counselling Teachers for module development and a need for more systematic knowledge and intervention guidance within school guidance and counselling services.

Supplementary Findings from Open-Ended Responses

The open-ended responses provided additional context to the quantitative findings. Recurring responses highlighted the importance of collaboration with parents, communities and relevant agencies, as well as stronger monitoring and enforcement related to e-cigarette use. Respondents also described challenges such as easy access to e-cigarettes, difficulties in detecting devices brought into school, limited parental monitoring and students' readiness to change. In addition, several responses emphasised the need for greater awareness and prevention efforts, more systematic and continuous intervention support and support for students who experience difficulties when attempting to stop e-cigarette use. These responses further illustrate the practical challenges and intervention needs identified by the participating Guidance and Counselling Teachers within the school context.

DISCUSSION AND RECOMMENDATIONS

The findings show that e-cigarette use was among the issues handled by the participating Guidance and Counselling Teachers. These findings reflect the views of practitioners who have direct experience in handling e-cigarette use cases among students and provide a practical picture of intervention needs in the school context. Although various interventions such as individual guidance, group guidance, individual counselling, group counselling, school prevention programmes and collaboration with external agencies have been implemented, almost half of the respondents still stated that the existing approaches need improvement. Time constraints and workload, the absence of a specific intervention module or guide and limited skills in implementing counselling interventions related to e-cigarette use were also identified as challenges. This suggests that the participating respondents had already used various approaches, but their assessments indicate that there is still room for improvement through clearer and more focused implementation guidance. Gardner et al. (2024) also found that school-based e-cigarette prevention interventions have not shown consistent effectiveness over longer follow-up periods, although some interventions produced positive effects on

knowledge, attitudes and intentions. The study highlighted the need to develop and implement evidence-based school programmes.

Respondents' views on the need for a more focused intervention can also be understood through the factors and issues identified from their observations and experience in handling cases. Peer influence was the factor most frequently identified by respondents, while difficulty controlling the urge to use e-cigarettes and returning to e-cigarette use after trying to quit were also identified as issues. Durkin et al. (2021) found that peer e-cigarette use was associated with adolescents' self-efficacy to refrain from using e-cigarettes. The study also suggested that peer influence and self-efficacy should be considered in interventions aimed at preventing or reducing e-cigarette use. Research on smoking has also reported an association between psychological resilience and nicotine dependence. (Aydin & Celiay Soyler, 2022). Therefore, intervention development may need to go beyond providing information about the harms of e-cigarettes by also considering strategies that help students build confidence and cope with stress and situations that may encourage repeated use. This practitioner-based information considered alongside the cited literature also provides a basis for considering self-efficacy and resilience in the development and future evaluation of the proposedCBT-based group guidance module.

In this context, CBT may be relevant to the intervention needs identified by the participating Guidance and Counselling Teachers. Within this sample, peer influence, difficulty controlling the urge to use e-cigarettes and returning to e-cigarette use after trying to quit were among the issues frequently identified by respondents based on their observations and experience in handling cases. These findings suggest that intervention components addressing social pressure, triggers, strong urges, coping responses and relapse may be relevant within the school context. CBT provides cognitive and behavioural strategies that may help students identify patterns and triggers of use, re-evaluate thoughts that support e-cigarette use, develop coping strategies and practise refusal skills in high-risk social situations. Becker (2024) similarly explained that CBT for adolescents can include trigger identification, cognitive strategies, relaxation, emotion regulation and peer-refusal skills to support the management of urges and situations associated with e-cigarette use.

Support for these components can also be seen in interventions specifically designed for adolescent e-cigarette cessation. Schuster et al. (2023) included trigger identification, management of strong urges, problem-solving, lapse and relapse management, skills for coping with social pressure and stress management in a behavioural counselling protocol for adolescents who wanted to quit e-cigarettes. Graham et al. (2024) reported that a text-message intervention that provided cognitive and behavioural coping skills training and social support produced higher vaping cessation rates than the control group among adolescents aged 13 to 17 years. Although these interventions differ from group guidance, the findings support the use of cognitive and behavioural components in e-cigarette cessation interventions for adolescents.

The proposed group guidance format may also be considered relevant within the school context. In the present study, participating Guidance and Counselling Teachers reported the use of group counselling (80.0%) and group guidance (57.3%) as part of existing school practices. Previous research has also used school-based cognitive-behavioural group counselling in adolescent nicotine cessation programmes. Bailey et al. (2013), for example, implemented school-based cognitive-behavioural group counselling with adolescent smokers. In addition, Bold et al. (2022) found that adolescents expressed interest in school-based vaping cessation programmes that included skills for managing stress, relaxation and other quitting-related challenges. Together, these findings provide support for considering a structured group format as one possible approach for delivering cognitive and behavioural skills within school guidance and counselling services.

In addition, respondents agreed on the need for knowledge about CBT-based modules, systematic and structured guidance and module development for use by Guidance and Counselling Teachers. Based on these needs, a structured CBT-based group guidance module could provide clearer implementation guidance through a sequence of sessions and activities suited to the school context. Components that may be considered include trigger identification, management of strong urges, peer-refusal skills, cognitive restructuring, coping strategies, strengthening self-efficacy, stress management and relapse prevention.

From a practical perspective, module development may also need to consider the implementation conditions identified by respondents particularly time constraints and workload, the need for clearer intervention guidance and collaboration with parents and relevant agencies. Considering these aspects may help make the proposed module more responsive to the context of school guidance and counselling services.

These components are supported by the approach described by Becker (2024) and the adolescent vaping intervention by Schuster et al. (2023) while Gardner et al. (2024) also highlighted the importance of school programmes with a theoretical basis and skills training. The final content of the module should then be determined through a systematic development process. Overall, this needs analysis provides initial input from Guidance and Counselling Teachers that can be considered in developing a CBT-based group guidance module for secondary school settings.

CONCLUSION

Overall, the findings indicate perceived need and support among the participating Guidance and Counselling Teachers for the development of a systematic and structured Cognitive Behavioural Therapy (CBT)-based group guidance module to help address e-cigarette use among secondary school students. These findings also highlight the relevance of CBT as a structured approach that may address several needs identified by respondents through cognitive and behavioural strategies such as trigger identification, coping with strong urges, peer-refusal skills, stress management and relapse prevention. The proposed group guidance format may also provide a practical school-based structure for delivering these components within guidance and counselling services. The literature discussed also suggests that self-efficacy and resilience may warrant consideration in module development and future evaluation. Therefore, this needs analysis provides initial input for the systematic development and subsequent evaluation of a CBT-based group guidance module for secondary school settings.

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