Beyond Medication: Exploring Music Therapy Perspectives among Pharmacy Students

Mohd Izani Othman[1,2], Mohd Ikhmal Hanif Abdul Khalid[1*]

[1]Faculty of Pharmacy, Universiti Teknologi MARA, Cawangan Pulau Pinang, Bertam Campus, 13200 Kepala Batas, Pulau Pinang, Malaysia

[2]Telehealth and Remote Patient Care Research Interest Group, Universiti Teknologi MARA, Cawangan Selangor, Puncak Alam Campus, 42300 Bandar Puncak Alam, Selangor, Malaysia

[*]Corresponding Author

DOI: https://doi.org/10.47772/IJRISS.2026.100500754

Received: 16 May 2026; Accepted: 22 May 2026; Published: 12 June 2026

ABSTRACT

Mental health disorders represent a growing global public health concern, with disproportionate burden documented among young adults and university students. Non-pharmacological approaches, including music therapy, have attracted considerable clinical interest as adjunct or alternative interventions; however, their uptake is contingent upon public knowledge and awareness. This study aimed to determine the knowledge, awareness, and behaviours of music therapy on mental health among Diploma of Pharmacy students at UiTM Bertam Campus. A cross-sectional survey was conducted between May and June 2024 among students with active enrolment status. A bilingual (English and Bahasa Malaysia) questionnaire was administered electronically via Google Forms. Data were analysed using IBM SPSS version 16.0. Descriptive statistics and chi-square tests were applied to assess knowledge levels and their association with demographic factors. A total of 170 respondents participated. The sample was predominantly female (74.7%) and aged 20–21 years (72.9%). Most respondents (84.7%) had some familiarity with music therapy, and the majority (86%) affirmed that music therapy can influence emotional functioning. However, chi-square analysis revealed no statistically significant association between any demographic factor and knowledge score. Concerning behavioural intent, 30.5% of respondents reported currently receiving or considering music therapy, with social stigma identified as the primary barrier. Despite generally satisfactory awareness, a substantive proportion of pharmacy students demonstrated incomplete understanding of music therapy. Stigma surrounding help-seeking remains a significant barrier. Targeted educational interventions within pharmacy curricula and broader community platforms are recommended to improve awareness, destigmatise mental health help-seeking, and promote evidence-based non-pharmacological therapies.

Keywords: music therapy, mental health, pharmacy students, non-pharmacological therapy

INTRODUCTION

Mental health is increasingly recognised as an indispensable dimension of overall health and well-being. According to the World Health Organisation (WHO), mental health is not merely the absence of disorder but a state of well-being in which individuals can realise their abilities, cope with ordinary life stresses, work productively, and contribute meaningfully to their communities. Globally, approximately 1 in 8 people live with a mental disorder, placing an enormous burden on healthcare systems, economies, and societies (WHO 2022). In Malaysia, the National Health and Morbidity Survey conducted by the Ministry of Health (MOH) in 2016 revealed that 1 in 3 Malaysians aged 16 years and above experience a mental health problem, representing a prevalence of 29.2% (MOH 2016). The national mental health burden has intensified over successive years: suicidal cases increased by 81% in 2021, with 1,142 cases recorded compared to 631 in 2020 (NST 2022). The economic cost of untreated mental illness is equally alarming; in 2018, mental health problems in the Malaysian

workplace were estimated to cost the economy GBP 2.26 billion, equivalent to MYR 4.46 billion (Raaj et al. 2021).

Young adults and university students constitute a particularly vulnerable subgroup. The transition to tertiary education is accompanied by heightened academic demands, financial pressures, social adjustment, and, in many cases, geographic displacement from family support networks (McMillan et al. 2020). Among pharmacy students, these challenges are compounded by the rigour of professional training and the inherent responsibility of future clinical roles. Research conducted at UiTM Bertam Campus has documented psychosocial stressors associated with forced migration to online learning modalities, illustrating the considerable mental health impact of abrupt pedagogical transitions on this student cohort (Othman et al. 2022a). The same institutional population has also demonstrated vulnerability to anxiety and stress in the context of evolving academic and career expectations (Othman et al. 2024a). Music has been shown to positively influence students' mental health by reducing anxiety and improving emotional well-being in academic settings (Wang et al. 2022), while music therapy has similarly demonstrated effectiveness in managing anxiety and emotional regulation among younger student populations (Li 2022), suggesting its potential as an accessible intervention across educational contexts.

Pharmacological treatments, including selective serotonin reuptake inhibitors (SSRIs), tricyclic antidepressants (TCAs), and monoamine oxidase inhibitors (MAOIs), remain mainstays of psychiatric management. Nevertheless, pharmacological monotherapy is widely acknowledged to be insufficient across many diagnostic categories, including schizophrenia, bipolar disorder, and treatment-resistant depression (Oakes-Cornellissen et al. 2023). Moreover, the adverse effects of psychotropic medications encompassing sedation, sexual dysfunction, and, paradoxically, suicidal ideation underscore the need for complementary, non-pharmacological strategies. The growing prevalence of polypharmacy in the Malaysian population, as recently documented by Abdul Khalid et al. (2025), further highlights the imperative to integrate evidence-based non-pharmacological options into the therapeutic repertoire to reduce medication burden and improve patient outcomes. Music-based treatments have additionally demonstrated broader benefits for patients with serious mental illness, including improved social connectivity, other health-promoting behaviours, and enhanced personal resilience (Golden et al. 2021).

Music therapy has emerged as a credible, empirically supported non-pharmacological intervention for a range of mental health conditions. Defined by the American Music Therapy Association (AMTA) as the clinical and evidence-based use of music interventions to accomplish individualised goals within a therapeutic relationship, music therapy encompasses both receptive modalities (e.g., listening to pre-recorded music) and active modalities (e.g., improvisation and lyric analysis). Neurobiologically, music stimulates the mesolimbic dopaminergic system and the amygdala, brain regions critically involved in emotional processing and reward (de Witte et al. 2020; Ning et al. 2022). Clinically, music therapy has demonstrated efficacy in reducing anxiety and self-rating anxiety scale (SAS) scores (Shunqin 2018), improving sleep quality measured by the Pittsburgh Sleep Quality Index (PSQI) (Dickson & Schubert 2020; Tang et al. 2021), and attenuating trauma symptoms associated with post-traumatic stress disorder (PTSD) (Ning et al. 2022). Beyond formal clinical applications, everyday music listening has been consistently documented to reduce stress in daily life (Linnemann et al. 2015), and music has been shown to promote broader healthy behaviours including physical activity and social engagement (Batt-Rawden & Tellnes 2011). The far-reaching impact of music on human development and well-being has been recognised across diverse populations throughout the lifespan (Welch et al. 2020).

Despite this evidence base, public awareness of music therapy remains limited. Studies conducted in diverse cultural contexts indicate that many individuals, even within healthcare professions, possess only rudimentary knowledge of music therapy's clinical applications, formal requirements, and therapeutic modalities (Morgan et al. 2020). Within Malaysia, the visibility of music therapy is nascent and its cultural acceptance variable. Among pharmacy students at UiTM Bertam Campus, who represent the future frontline of pharmaceutical care and patient counselling, understanding perceptions of music therapy is particularly important given their potential role as advocates of integrative health approaches (Othman et al. 2024b). Moreover, social media trends among this cohort suggest considerable digital engagement that could be leveraged to disseminate health promotion messages, including those pertaining to non-pharmacological mental health interventions (Najib et al. 2023).

This study therefore aimed to determine the knowledge, awareness, and behaviours of pharmacy students towards music as a mental health therapy at UiTM Bertam Campus. Specifically, the study sought to: (i) characterise the

sociodemographic profile of the respondents; (ii) assess general knowledge of music therapy among these students; and (iii) examine the association between demographic factors and knowledge scores.

MATERIALS AND METHOD

Study Design and Setting

A cross-sectional survey was conducted between May and June, 2024, at the Faculty of Pharmacy, Universiti Teknologi MARA (UiTM), Cawangan Pulau Pinang, Bertam Campus. The cross-sectional design was selected for its efficiency in capturing population-level prevalence data and its suitability for descriptive and correlational analyses within a defined academic period (Othman et al. 2022b). The study was conducted in full accordance with the ethical principles of the Declaration of Helsinki, and participation was voluntary with assured confidentiality.

Study Population and Sampling

The target population comprised all students enrolled in the Diploma of Pharmacy programme at UiTM Bertam Campus who held active learning status during Semesters 2, 4, and 6. The total population was 250 active students as of April 2024. The minimum required sample size was calculated using the Raosoft online calculator at a 95% confidence interval and a 5% margin of error, yielding a recommended minimum of 152 students. An additional 10% inflation factor was applied to account for potential non-response or missing data, producing a final target sample size of 167 students. Convenience sampling, a non-probability sampling approach, was employed to maximise response rate given practical resource constraints. A total of 170 complete responses were received, exceeding the calculated target.

Data Collection Instrument

Data were collected via a self-administered, structured questionnaire administered through Google Forms. The questionnaire was adapted and modified from the validated survey instrument developed by Morgan et al. (2020), which assesses public awareness and perceptions of music therapy. To ensure accessibility, the questionnaire was bilingual (English and Bahasa Malaysia). The instrument comprised three sections: (i) a demographic section (gender, age group, current semester, and state of residence); (ii) a knowledge section comprising seven multiple-choice questions (MCQs); and (iii) an awareness and behaviours section comprising nine MCQs. The survey link was disseminated through WhatsApp and Telegram group chats specific to Diploma of Pharmacy students at UiTM Bertam Campus, consistent with validated data collection modalities previously employed within this student population (Najib et al. 2023; Othman et al. 2022a).

Statistical Analysis

Data were analysed using IBM Statistical Package for Social Sciences (SPSS) version 16.0. Descriptive statistics, including frequencies, percentages, means, medians, and modes, were computed for all variables. Knowledge scores were calculated by summing each respondent's correct MCQ responses; the mean score was used as a cut-off to dichotomise respondents into two categories: good knowledge (score > 17) and poor knowledge (score ≤ 17). Chi-square tests of independence were applied to examine the association between demographic variables (gender, age group, and semester of study) and knowledge category. A p-value < 0.05 was considered statistically significant.

RESULTS AND DISCUSSION

Demographic Characteristics

A total of 170 students completed the survey. The majority of respondents were female (n = 127; 74.7%), reflecting the predominantly female enrolment typically observed within pharmacy programmes at Malaysian public universities (Othman et al. 2024a). The largest age cohort was 20–21 years (n = 124; 72.9%), with smaller proportions in the 18–19 (n = 27; 15.9%) and 22–23 (n = 19; 11.2%) age groups. By academic semester, the greatest representation was from Semester 6 students (n = 74; 43.5%), followed by Semester 4 (n = 50; 29.4%)

and Semester 2 (n = 46; 27.1%). Geographically, respondents originated from across 12 Malaysian states and federal territories, with Negeri Sembilan (20.0%), Selangor (13.5%), and Kelantan (11.8%) accounting for the largest proportions. Full demographic details are presented in Table 1.

Table 1. Demographic characteristics of respondents (N = 170)

Variable	Category	n (%)
Gender	Female	127 (74.7)
	Male	43 (25.3)
Age group (years)	18–19	27 (15.9)
	20–21	124 (72.9)
	22–23	19 (11.2)
Semester	2	46 (27.1)
	4	50 (29.4)
	6	74 (43.5)
State of residence	Negeri Sembilan	34 (20.0)
	Selangor	23 (13.5)
	Kelantan	20 (11.8)
	Terengganu	16 (9.4)
	Kedah	16 (9.4)
	Pulau Pinang	16 (9.4)
	Johor	13 (7.6)
	Others	32 (18.8)

Knowledge of Music Therapy

When asked whether they had heard of music therapy, 41.2% of respondents replied affirmatively with substantial knowledge, while 43.5% indicated partial familiarity (heard of the term but did not know much about it), and 15.3% were entirely unfamiliar. Collectively, 84.7% demonstrated some level of awareness of the concept. These rates compare favourably with findings from Morgan et al. (2020), where 94.4% of a general adult sample affirmed the emotional impact of music therapy, suggesting that the emotional mechanism of music therapy is broadly intuitive regardless of professional background. Regarding other therapies, counselling was the most recognised (64% with high awareness), whereas cognitive behavioural therapy (CBT) had the highest proportion of students who had not heard of it at all (39%), likely attributable to the less intuitive nature of the abbreviation.

Regarding the perceived target population for music therapy, the majority of respondents (64.7%) believed it could benefit people of all ages, while 27.6% considered it primarily for individuals rather than groups. When asked about the domains of functioning that music therapy could influence (Table 2), the highest affirmative response was observed for the emotional domain (86%), confirming that emotion regulation is the most widely appreciated therapeutic mechanism. The neurobiological basis for this perception is well-established: music elicits dopamine release within the mesolimbic reward system, underpinning its mood-modulatory and anxiolytic effects (de Witte et al. 2020). Social and language/speech domains also attracted affirmative responses from 78% of respondents each, while certainty about music therapy's impact on behavioural domains was comparatively lower, with 20% of respondents responding 'not sure.' These findings are consistent with empirical evidence demonstrating that music experiences reliably alter both positive and negative emotional states in university student populations (Blasco-Magraner et al. 2023), and that young people predisposed to depression actively engage music for conscious mood regulation (Stewart et al. 2019).

Concerning the perceived formal training requirements to practise as a music therapist, the plurality of respondents identified an undergraduate degree (45.9%) as the minimum requirement, followed by a master's degree (31.2%), doctoral degree (11.8%), and school education (11.2%). These findings reflect generally appropriate expectations commensurate with international credentialing standards, which vary by country (Morgan et al. 2020). Nevertheless, the bifurcation in knowledge with 43.5% reporting only surface-level familiarity underscores that awareness does not equate to operational knowledge. A pharmacist who cannot explain the clinical mechanisms, evidence base, or referral pathways for music therapy will be poorly positioned to guide patients seeking integrative care options. Similar curricular gaps have been identified in other domains of patient-centred care within pharmacy education (Othman et al. 2024b).

Table 2. Student beliefs about the domains impacted by music therapy (N = 170)

Domain	Yes, n (%)	No, n (%)	Not Sure, n (%)
Social	133 (78)	5 (3)	32 (19)
Emotional	146 (86)	8 (5)	16 (9)
Behavioural	117 (69)	19 (11)	34 (20)
Cognitive	126 (74)	14 (8)	30 (18)
Language and Speech	133 (78)	12 (7)	25 (15)

Awareness and Behavioural Data

Most respondents correctly disagreed with the notion that formal musical training is a prerequisite for participating in music therapy: 58% disagreed that one must be a skilled musician, 56% disagreed that the ability to write songs is required, 44% disagreed that willingness to perform to an audience is necessary, and 42% disagreed that prior performance experience is required. These findings indicate a generally appropriate appreciation that music therapy is participation-driven rather than performance-oriented.

Regarding expectations of a music therapy session, 72% of respondents expected lyric analysis to feature prominently, 66% expected musical improvisations, and 62% expected therapeutic discussion. The majority (52%) also expected musical instruments to be played by non-musicians, consistent with the receptive and participatory nature of many clinical music therapy modalities. These expectations broadly align with established music therapy practice, which encompasses both analytical (Aigen 2021) and community-based (Stige & Aaro 2017) approaches. Participant accounts further support these expectations; music therapy recipients have described lyric analysis and musical improvisation as meaningful vehicles for emotional expression, coping, and rebuilding a productive relationship with music as a health resource (McCaffrey & Edwards 2016).

With respect to personal behavioural intent, 27.6% of respondents had considered receiving music therapy, and 2.9% were currently receiving it, yielding a combined uptake-or-consideration rate of 30.5%. This rate is notably higher than the 8.3% reported by Morgan et al. (2020), which may reflect generational shifts in openness towards non-pharmacological therapies among younger Malaysian cohorts, potentially facilitated by the expanding digital health information environment that this population actively engages with (Najib et al. 2023). When asked about engagement with any form of therapy, 26.5% confirmed prior or current engagement, and 50.6% indicated they had never considered any therapeutic intervention. It is also worth noting that music is widely used as a self-selected stress-recovery tool by young adults following stressful experiences (Adiasto et al. 2023), which may normalise its therapeutic potential and lower the psychological threshold for formal music therapy uptake.

Among those who had neither received nor considered music therapy, social stigma was the foremost barrier: 28.2% ranked 'people would judge me for seeking help' as their primary reason. This was followed by lack of understanding about music therapy (20.6%), belief that other therapies were more suitable (21.8%), self-directed therapy (15.9%), and absence of local access (13.5%). Furthermore, 65.9% of respondents were unaware of any music therapy services in their local area, and 62.9% indicated they would seek such services via internet search. This finding underscores the importance of providing accessible and accurate online information about music therapy, and equipping future pharmacists with the knowledge to make informed referrals.

Bivariate Analysis

The overall knowledge score ranged from 4 to 25 (maximum possible: 25), with a mean of 17.15, median of 18, and mode of 20. Based on the mean-derived cut-off, 51.18% of respondents (n = 87) were categorised as having good knowledge and 48.82% (n = 83) as having poor knowledge. Among female respondents, 52.76% attained good knowledge, compared to 46.51% of males. Chi-square analysis (Table 3) revealed no statistically significant associations between any demographic variable and knowledge category, including gender (p = 0.501), age group (p = 7.773), or semester (p = 3.941). This is consistent with patterns observed in prior cross-sectional health knowledge studies within Malaysian pharmacy student populations (Othman et al. 2022b) and suggests that music therapy knowledge is acquired primarily through informal channels such as media, social networks, and personal experience rather than structured academic instruction.

Table 3. Chi-square analysis: association between demographic factors and knowledge category.

Demographic Factor	Good Knowledge, n (%)	Poor Knowledge, n (%)	p-value
Gender			
Female	67 (52.76)	60 (47.24)	0.501
Male	20 (46.51)	23 (53.49)	
Age group	—	—	7.773[a]
Semester	—	—	3.941[a]

[a] *Chi-square statistic reported; p > 0.05 for all comparisons. Significance level set at α = 0.05.*

The absence of a significant semester effect in knowledge scores is particularly noteworthy, as it implies that progression through the pharmacy programme does not meaningfully enhance knowledge of music therapy or related non-pharmacological interventions, a potential curricular lacuna. In this regard, it is noteworthy that counselling was recognised by the greatest proportion of respondents (64%), while CBT remained unfamiliar to 39%, likely because CBT, despite being the most extensively validated psychological therapy for depression and anxiety, is not routinely integrated into Malaysian pharmacy undergraduate curricula. Future pharmacists trained at this institution and other comparable institutions are well-positioned to advocate for integrative approaches, provided their undergraduate training equips them with the necessary knowledge and competencies (Othman et al. 2024b).

The identification of social stigma as the predominant barrier to music therapy uptake (28.2% ranked it first) is consistent with findings from international literature documenting the pervasive influence of stigma on mental health help-seeking among young adults (McMillan et al. 2020). The fear of peer judgment is particularly salient among healthcare students, who may perceive help-seeking as incompatible with professional identity norms of resilience and self-sufficiency. Addressing this structural barrier requires not merely informational campaigns but systematic cultural change within healthcare training institutions including explicit integration of mental health literacy and anti-stigma curricula into pharmacy degree programmes.

From a pharmacotherapeutic perspective, the growing pharmacological burden in the community population, illustrated by the prevalence and determinants of polypharmacy documented by Abdul Khalid et al. (2025) within the Malaysian context reinforces the imperative for evidence-based non-pharmacological alternatives. Polypharmacy carries well-documented risks including drug-drug interactions, adverse effects, and medication non-adherence; music therapy and other adjunctive non-pharmacological modalities may serve to reduce psychotropic medication requirements and the associated iatrogenic risks. Evidence supports music therapy's efficacy in reducing anxiety (Shunqin 2018), improving sleep quality (Dickson & Schubert 2020; Tang et al. 2021), and alleviating stress through modulation of the mesolimbic system and amygdala (de Witte et al. 2020), all of which are commonly co-morbid with polypharmacy in community patients.

Limitations

This study has several limitations that warrant acknowledgment. First, the use of convenience sampling restricted to a single institution limits the generalisability of the findings beyond the UiTM Bertam Campus pharmacy student population. Future research should recruit participants from pharmacy programmes across multiple universities, encompassing diverse institutional profiles, geographical settings, and student demographics, to enhance the generalisability of findings and enable rigorous comparative analyses of knowledge, awareness, and behavioural patterns regarding music therapy across the broader pharmacy student community in Malaysia. Second, the exclusively quantitative cross-sectional design precludes causal inference and provides limited insight into the underlying factors shaping music therapy knowledge and attitudes. Future studies would benefit from adopting a mixed-methods design that integrates quantitative surveys with qualitative components such as in-depth individual interviews or structured focus group discussions. Such an approach would yield richer, contextualised understanding of students' perceptions of music therapy, the specific misconceptions they hold regarding its clinical application and scope of practice, and the socio-cultural mechanisms that sustain stigma-related barriers to help-seeking among this cohort.

Third, social desirability bias may have influenced self-reported behavioural intentions, potentially inflating willingness to seek or consider music therapy. Fourth, while the questionnaire was adapted from the instrument developed by Morgan et al. (2020) and contextualised for a Malaysian pharmacy student population, detailed psychometric information regarding formal validation procedures and reliability testing was not reported. Future studies should undertake systematic validation of any adapted or newly developed instrument, including content validity assessment by subject-matter experts, pilot testing with a representative subsample, and confirmatory factor analysis where applicable. Reliability indices such as Cronbach’s alpha for each subscale should be reported transparently to enhance methodological rigour and facilitate meaningful cross-study comparisons. Notwithstanding these limitations, the present study provides a meaningful baseline characterisation of music therapy knowledge, awareness, and behavioural intentions among Malaysian pharmacy students, and its findings lay the groundwork for more comprehensive, multi-institutional, and methodologically robust investigations in this underexplored field.

CONCLUSION

This cross-sectional study provides evidence that Diploma of Pharmacy students at UiTM Bertam Campus possess moderate awareness of music therapy, with the majority recognising its emotional and psychological applications. Nonetheless, deep conceptual understanding remains limited in a substantial proportion of respondents, and social stigma constitutes the primary barrier to help-seeking. Demographic factors do not significantly predict knowledge levels, suggesting that formal curriculum rather than personal characteristics is the appropriate lever for improvement. The integration of music therapy education alongside broader non-pharmacological mental health content into pharmacy undergraduate training represents a pragmatic and high-yield strategy for equipping future pharmacists to promote evidence-based integrative care. Institutional efforts to destigmatise mental health help-seeking within healthcare professional communities, and to enhance the online accessibility of credible information on music therapy services, are additionally recommended.

ACKNOWLEDGEMENT

The authors would like to express their sincere gratitude to all students who voluntarily participated in this survey. The support and cooperation of Universiti Teknologi MARA Cawangan Pulau Pinang in facilitating the data collection process and the successful execution of this study are gratefully acknowledged. The authors also acknowledge the use of AI-assisted language editing tools during manuscript preparation to enhance clarity and grammatical accuracy. Nevertheless, all intellectual content, data interpretation, and final editorial decisions remain entirely the responsibility of the authors.

CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

REFERENCES

1. Abdul Khalid, M. I. H., Raban, N. N., Fatih, M., Abu Seman, M. H., & Shahrudin, M. I. (2025). Analysis of determinants and prevalence of polypharmacy in Malacca. *Malaysian Journal of Social Sciences and Humanities (MJSSH), 10*(10), e003617. https://doi.org/10.47405/mjssh.v10i10.3617
2. Adiasto, K., van Hooff, M. L. M., Beckers, D. G. J., & Geurts, S. A. E. (2023). The sound of stress recovery: An exploratory study of self-selected music listening after stress. *BMC Psychology, 11*(1), 47. https://doi.org/10.1186/s40359-023-01066-w
3. Aigen, K. (2021). The inner music of analytical music therapy. *Nordic Journal of Music Therapy, 30*(3), 195–196. https://doi.org/10.1080/08098131.2021.1904667
4. Batt-Rawden, K., & Tellnes, G. (2011). How music may promote healthy behaviour. *Scandinavian Journal of Public Health, 39*(2), 113–120. https://doi.org/10.1177/1403494810393555
5. Blasco-Magraner, J. S., Bernabé-Valero, G., Marín-Liébana, P., & Botella-Nicolás, A. M. (2023). Changing positive and negative affects through music experiences: A study with university students. *BMC Psychology, 11*(1), 59. https://doi.org/10.1186/s40359-023-01110-9
6. de Witte, M., Pinho, A. da S., Stams, G.-J., Moonen, X., Bos, A. E. R., & van Hooren, S. (2020). Music therapy for stress reduction: A systematic review and meta-analysis. *Health Psychology Review, 16*(1), 134–159. https://doi.org/10.1080/17437199.2020.1846580
7. Dickson, G. T., & Schubert, E. (2020). Music on prescription to aid sleep quality: A literature review. *Frontiers in Psychology, 11*, 1695. https://doi.org/10.3389/fpsyg.2020.01695
8. Golden, T. L., Springs, S., Kimmel, H. J., Gupta, S., Tiedemann, A., Sandu, C. C., & Magsamen, S. (2021). The use of music in the treatment and management of serious mental illness: A global scoping review of the literature. *Frontiers in Psychology, 12*, 649840. https://doi.org/10.3389/fpsyg.2021.649840
9. Li, D. (2022). Music therapy in mental health and emotional diversion of primary and secondary school students. *Occupational Therapy International, 2022*, 8370682. https://doi.org/10.1155/2022/8370682
10. Linnemann, A., Ditzen, B., Strahler, J., Doerr, J. M., & Nater, U. M. (2015). Music listening as a means of stress reduction in daily life. *Psychoneuroendocrinology, 60*, 82–90. https://doi.org/10.1016/j.psyneuen.2015.06.008
11. McCaffrey, T. M., & Edwards, J. (2016). "Music therapy helped me get back doing": Perspectives of music therapy participants in mental health services. *Journal of Music Therapy, 53*(3), 247–272. https://doi.org/10.1093/jmt/thw002
12. McMillan, S. S., Stewart, V., Wheeler, A. J., Kelly, F., & Stapleton, H. (2020). Medication management in the context of mental illness: An exploratory study of young people living in Australia. *BMC Public Health, 20*(1), 1254. https://doi.org/10.1186/s12889-020-09237-9
13. Ministry of Health Malaysia. (2016). *National Health and Morbidity Survey 2015: Mental health*. Institute for Public Health.
14. Morgan, S., Humphreys, J., & Warner, C. (2020). What is music therapy? A survey study of public awareness and perceptions of the profession. *PsyArXiv*. https://doi.org/10.31234/osf.io/vybma
15. Najib, M. N. M., Othman, M. I., Sulaiman, S., Tenda, P. E., & Zabidi, M. A. (2023). Trends in social media use among university students during the Covid-19 pandemic. *International Journal of Academic Research in Progressive Education and Development, 12*(2), 774–784. https://doi.org/10.6007/IJARPED/v12-i2/16970
16. Ning, M., Wen, S., Zhou, P., & Zhang, C. (2022). Ventral tegmental area dopaminergic action in music therapy for post-traumatic stress disorder: A literature review. *Frontiers in Psychology, 13*, 1014202. https://doi.org/10.3389/fpsyg.2022.1014202
17. NST Online. (2022). *Suicide cases up 81% in 2021*. New Straits Times. https://www.nst.com.my
18. Oakes-Cornellissen, A., Morton, D., Rankin, P., & Renfrew, M. (2023). Efficacy of a multimodal lifestyle intervention (The Lift Project) for improving the mental health of individuals with an affective mood disorder living in South Africa. *Frontiers in Psychology, 14*, 1127068. https://doi.org/10.3389/fpsyg.2023.1127068
19. Othman, M. I., Sulaiman, S., Mohd Najib, M. N., & Wan Ismail, W. N. H. (2022a). Forced online and distance learning during COVID-19 pandemic: Students' perceptions and experiences. *Asian Journal of University Education (AJUE), 18*(4), 894–905. https://doi.org/10.24191/ajue.v18i4.19994

20. Othman, M. I., Sulaiman, S., Mohd Najib, M. N., & Wan Ismail, W. N. H. (2022b). Covid-19 transmission and prevention: Knowledge and awareness among Diploma in Pharmacy students. *International Journal of Education, Psychology and Counseling, 7*(46), 430–442.
21. Othman, M. I., Mohd Najib, M. N., Sulaiman, S., Abdul Khalid, M. I. H., Zamri, M. I. D., Mohd Shakri, M. S., & Mohd Izzudin, M. A. (2024a). Pathway to success: Exploring students' perspectives on career aspirations in pharmacy. *Jurnal Intelek, 19*(1), 103–114.
22. Othman, M. I., Mohd Najib, M. N., & Sulaiman, S. (2024b). Through the pharmacy lens: Unveiling students' insights into the curriculum. *Asian People Journal (APJ), 7*(2), 86–99.
23. Raaj, S., Murugaiah, C., Mokhtar, N., & Krishnapillai, A. (2021). Mental health in Malaysia: Trends and economic burden. *Journal of Mental Health Policy and Economics, 24*(2), 85–92.
24. Shunqin, Y. (2018). Comparative study on the effect of different music therapy on auxiliary treatment of college students' anxiety. *Biomedical Research, 2018*(Special Issue), S216–S218. https://doi.org/10.4066/biomedicalresearch.29-17-826
25. Stewart, J., Garrido, S., Hense, C., & McFerran, K. (2019). Music use for mood regulation: Self-awareness and conscious listening choices in young people with tendencies to depression. *Frontiers in Psychology, 10,* 1199. https://doi.org/10.3389/fpsyg.2019.01199
26. Stige, B., & Aaro, L. E. (2017). *Where music helps: Community music therapy in action and reflection*. Routledge.
27. Tang, Y. W., Teoh, S. L., Yeo, J. H., Ngim, C. F., Lai, N. M., Durrant, S. J., & Lee, S. W. (2021). Music-based intervention for improving sleep quality of adults without sleep disorder: A systematic review and meta-analysis. *Behavioral Sleep Medicine, 20*(2), 241–259. https://doi.org/10.1080/15402002.2021.1915787
28. Wang, T., Zhao, Y., & Yin, M. (2022). Analysis and research on the influence of music on students' mental health under the background of deep learning. *Frontiers in Psychology, 13,* 998451. https://doi.org/10.3389/fpsyg.2022.998451
29. Welch, G. F., Biasutti, M., MacRitchie, J., McPherson, G. E., & Himonides, E. (2020). The impact of music on human development and well-being. *Frontiers in Psychology, 11,* 1246. https://doi.org/10.3389/fpsyg.2020.01246
30. World Health Organisation. (2022). *Mental disorders*. https://www.who.int/news-room/fact-sheets/detail/mental-disorders