

ORIGINAL ARTICLE

DEVELOPMENT OF PUZZLE-BASED INTERVENTION FOR ADOLESCENTS TO ENHANCE THE KNOWLEDGE ON DEPRESSION MANAGEMENT

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ABSTRACT

Informative puzzles can provide knowledge to the adolescents effectively as it was current trend nowadays. According to World Health Organization (WHO), globally it was found that 300 million people of all ages were suffering from depression. Their knowledge about its causes was inaccurate, lacking of understanding about depression and its healing makes this mental health issue remain unnoticed and untreated where they do not seek for any treatment. Therefore, introducing depression education through jigsaw puzzles gain more benefits together enhanced the knowledge and attitude level towards depression. This was a development study focusing on formulating and developing puzzle as an interventional approach to improve knowledge and attitude level on depression. Feasibility and acceptability of the puzzles has face validity by respondents and content validity by experts. The $r = .81$ which was high consider having high validity. Eight modules of puzzles developed named as (Knowledge, Depression Adolescents [KDA]-Puzzle) which consisted of Module 1 Sign and symptoms, Module 2 Types of depression, Module 3 Causes of depression, Module 4 Risk factors, Module 5 (Pharmacotherapy & medication) Medical treatment A, Module 6 Medical treatment B, Module 7 Alternative treatment and Module 8 Prevention of depression. Respondents and experts commented the puzzles really beneficial for the adolescents to learn and gain knowledge about depression. KDA-Puzzles gained positive feedback from the assessment. Newly develop KDA-Puzzles were feasible and acceptable among adolescents. This puzzles can be alternative game while staying at home during Movement Control Order (MCO) due to pandemic COVID 19, and create awareness towards depression.

Keywords: Depression, Knowledge, Jigsaw Puzzles, Intervention, Adolescents

INTRODUCTION

According to World Health Organization, depression become the second biggest illness in term of morbidity by another decade in this global¹. Depression known as common but serious illness that negatively affects a person's feelings, the way they think and their actions as well^{1, 2}. Globally it was found that about 300 million people of all ages were suffering from depression³. Their knowledge about its causes was inaccurate, lacking of understanding about depression and its healing makes this mental health issue remain unnoticed and untreated^{4, 5}. Introducing depression education through jigsaw puzzles will enhance self-evaluation, help to develop critical thinking and problem solving skills individually or as a group. Completing jigsaw puzzles have more health benefits including brain-training and hand-eye-coordination development, but it also decreases stress by

occupying and engaging the mind to create a sense of peaceful and calmness⁶. Therefore, introducing depression education through jigsaw puzzles gain more benefits together enhanced the knowledge and attitude level towards depression.

METHODS

Research design

This was a development study focusing on formulating and developing puzzles as an interventional approach to improve knowledge and attitude level on depression^{7, 8, 9}. There were 8 sets of puzzles developed in this study focusing adolescents. The survey was distributed through direct approach to the participants who met the inclusion.

Selection of sampling area

Selangor well known as a one of the greatest populated state in Malaysia, containing of 5.46 million people. The selected area for this research study is in Kuala Selangor which located in Selangor Darul Ehsan, Malaysia. Kuala Selangor is one of the nine districts in Selangor.

Selection of sample and eligibility criteria

Adolescents, age range from 15 to 19 years old who were attending tuition centres in Kuala Selangor area during the data collection were invited to participate in the study. A total of 10 participants selected for this study which were 5 female and 5 male. The inclusion criteria includes adolescents ranged from the age of 15 to 19 years old who able to either write, read or understand and communicate in Malay and English. Capable of completing the questionnaires (written or verbal and provide written consent for participation from parents or caregivers).

Development of puzzles

The overall process of puzzles development took about six months starting from January 2019 until June 2019. Idea generation and discussion on depression gathered especially on sign and symptoms, types, causes, risk factors, medical treatment, alternative treatment and prevention of depression adopted from several established studies.

Content of the puzzles

Content developed follow by puzzles development for depression intervention program. There were 8 sets of puzzles developed with the contains such as module 1 sign and symptoms, module 2 types, module 3 causes, module 4 risk factors, module 5 (Pharmacotherapy & medication) medical treatment A, module 6 medical treatment B, module 7 alternative treatment and module 8 prevention of depression among adolescent. This modules were named as Knowledge on Depression for Adolescents (KDA)-Puzzles. Began with draft, revise and content validation by experts was a part of feasibility and acceptability.

The symptoms of depression essential for a person to know to detect the issue earlier, together treat it right treatment^{10, 11, 12, 13}. Many people know 'depression' only, but not aware about types of depression present and how it causes. Thus, knowing all the related types and causes of

depression definitely will aid them to identify the issue together increase the help seeking attitude. Risk factors of depression was important to know as often combine to trigger depression. Knowing what raise the risk of depression may help to get best medical care when needed. Knowing the right treatment helps to detect and cure the issue effectively. In some cases, it was possible to prevent depression that was the reason to have knowledge and good attitude level on depression. The information of the puzzles were explained in detail as below in (Table 1).

Feasibility and Acceptability

Third step was Professional Service where the development of 8 set of puzzles such as module 1 sign and symptoms, module 2 types, module 3 causes, module 4 risk factors, module 5 (Pharmacotherapy & medication) medical treatment A, module 6 medical treatment B, module 7 alternative treatment and module 8 prevention of depression among adolescent. Next step were feasibility and acceptability. In this stage the face validity, respondent comments and suggestions obtained as a feedback and improvement of the puzzles.

Data analysis

The data collected were analysed descriptively and all the comments by respondents listed down accordingly to review and evaluate the effectiveness of puzzles. The content validity calculated descriptively based on the evaluation form filled by all the experts.

Ethical Approval

Ethical approval was obtained from University Ethic Committee, Research Management Centre, Management and Science University (Reference No: MSU-RMC-02, FR01/11/L2/018).

RESULTS

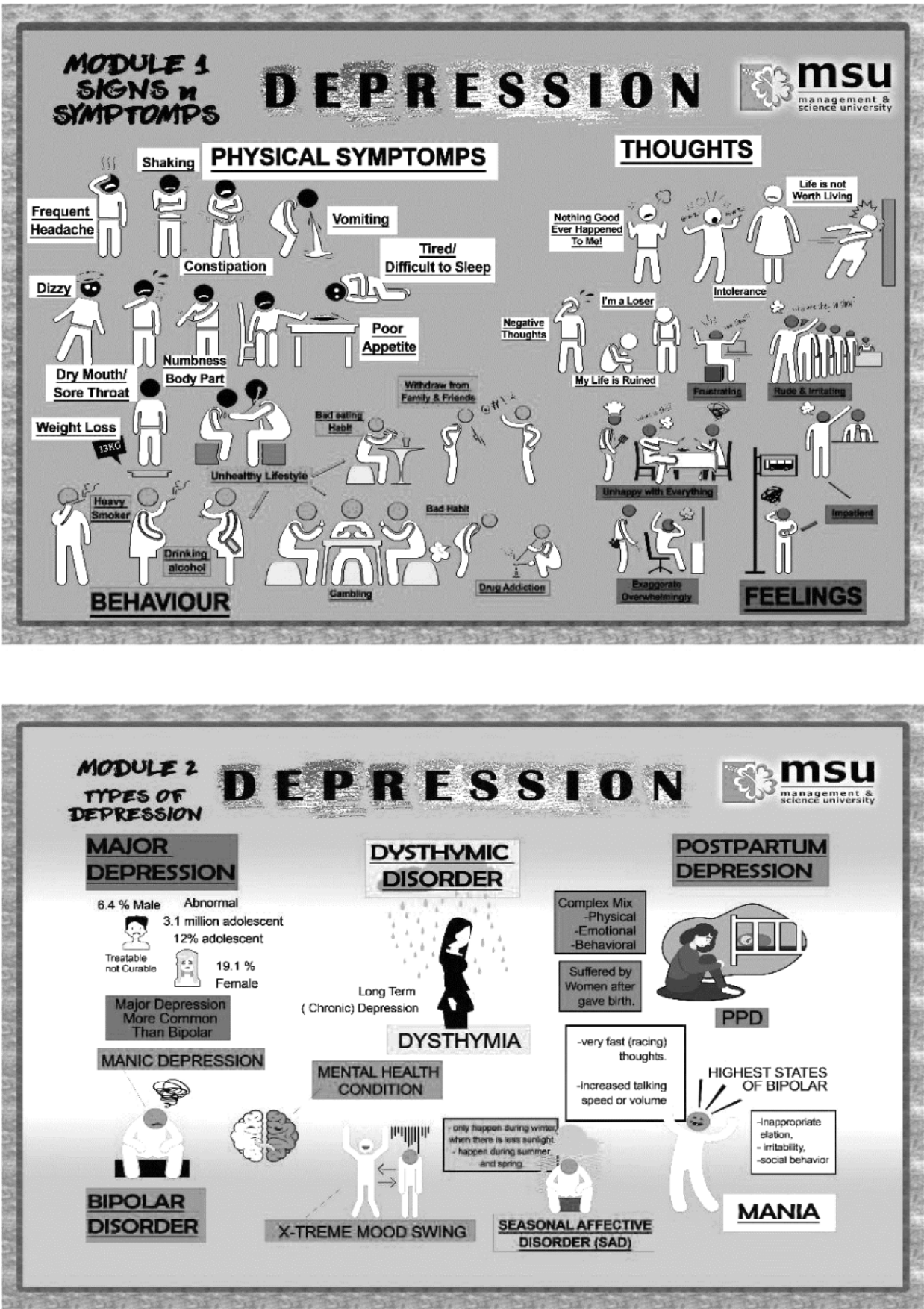
Content and puzzles development

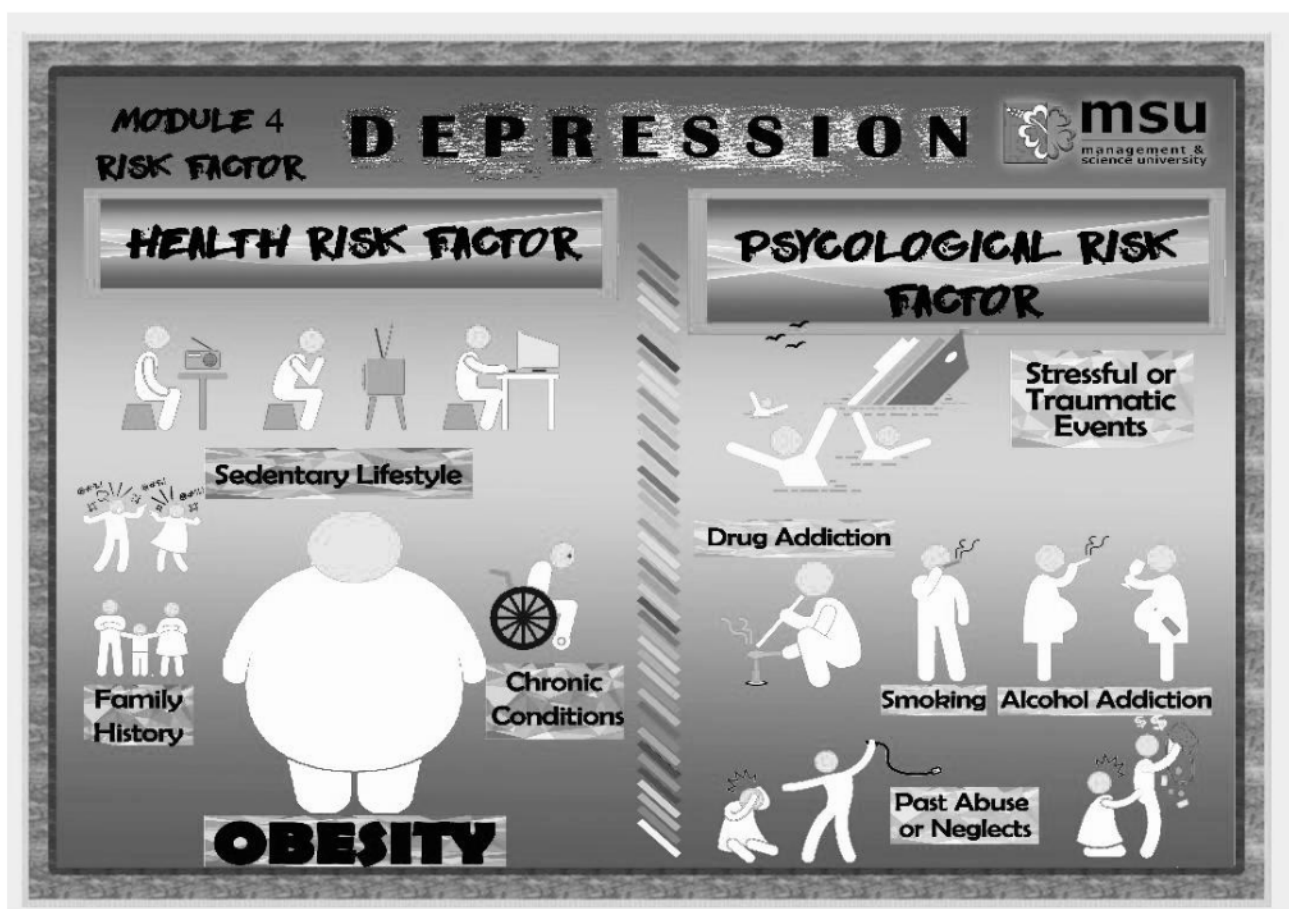
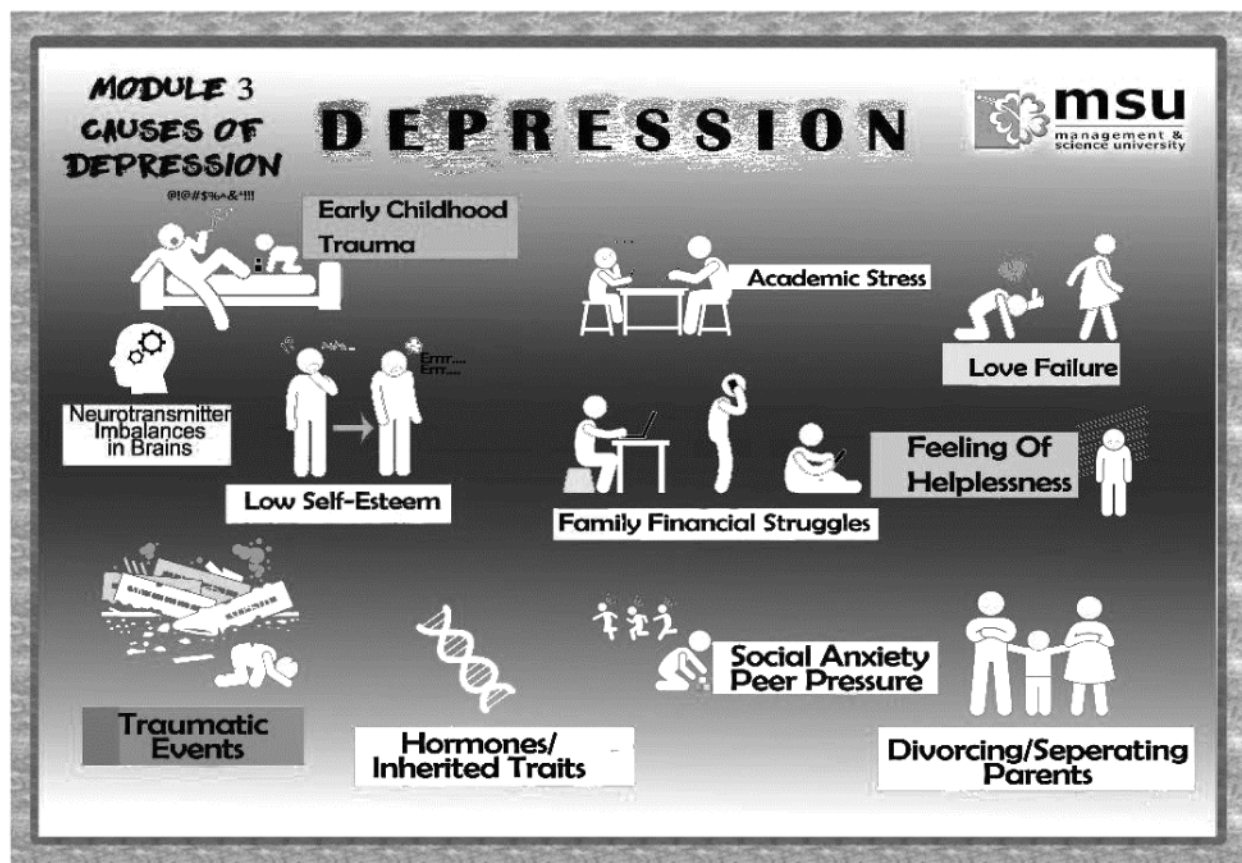
Pictures were included in the puzzles to aid the respondents to fix the missing pieces of puzzles accordingly together to understand the content of puzzles easily. After the data collection respondents gave a very good feedback about this informative puzzles. Based on the feedback from the respondents and experts a minor correction has been done accordingly. Modules of puzzles were finalized and shown in the table as below (Table 2).

Table 1: Content of KDA-Puzzles

KDA-Puzzles	Content of the puzzles
Module 1 Sign and symptoms of depression	Physical symptoms, behaviours, thoughts and feelings/ <i>gejala fizikal, kelakuan, pemikiran dan perasaan.</i>
Module 2 Types of depression	a) Major depression/ <i>kemurungan utama</i> ^{11, 14, 15} b) Dysthymic disorder/ <i>kemurungan berpanjangan</i> ¹⁶ c) Postpartum depression (PPD)/ <i>kemurungan selepas bersalin</i> ^{17, 18} d) Bipolar disorder/ <i>Gangguan Bipola</i> ^{19, 20, 21} e) Mania/ <i>mania</i> ^{19, 20}
Module 3 Causes of depression ^{15, 22, 23, 24, 25}	Academic Stress, traumatic events, heredity, family financial struggles, physical neglect, emotional neglect, low self-esteem, feelings of helpless, love failure, hormones, early childhood trauma, social anxiety, peer pressure, separating, divorce parents and neurotransmitter imbalances in brains/ <i>tekanan akademik, peristiwa traumatic, keturunan, masalah kewangan keluarga, pengabaian fizikal, pengabaian emosi, kurang keyakinan diri, perasaan tidak berdaya, putus cinta, hormone, trauma awal kanak-kanak, kebimbangan social, tekanan rakan sebaya, perpisahan atau perceraian ibu bapa dan ketidakseimbangan neurotransmitter di dalam otak.</i>
Module 4 Risk factors of depression	a) Health risk factors/ <i>Faktor risiko kesihatan</i> ^{26, 27, 28, 29, 30} b) Psychological risk factors/ <i>Faktor risiko psikologi</i> ^{31, 32, 33, 34, 35, 36}
Module 5 (Pharmacotherapy & medication) Medical treatment A	a) SSRIs ^{37, 38, 39} b) SNRIs Drugs ⁴⁰ c) Tricyclic Antidepressants ^{39, 41, 42} d) Monoamine Oxidase Inhibitors ^{43, 44}
Module 6 Medical treatment B	a) Psychotherapy - Talk therapy & Cognitive behavioral (CBT) ^{45, 46, 47} - Interpersonal therapy ^{25, 48, 49} - Group therapy ⁵⁰ - Psychodynamic therapy ^{51, 52} b) Family therapy ^{53, 54} c) Cognitive Hypnotherapy (CH) ^{55, 56}
Module 7 Alternative treatment	a) Initial step/ <i>Langkah awal</i> ^{57, 58, 59} - Exercise, healthy diet, good habits, meditation/ <i>Senaman, diet sihat, tabiat baik, meditasi.</i> b) Alternative medicine/ <i>Perubatan alternatif</i> ^{60, 61, 62} - Vitamin supplements, phytoestrogenic supplements, hormone-regulating supplements, Omega-3 fatty acids, acupuncture, massage therapy, ayurvedic therapy/ <i>Suplemen vitamin, suplemen phytoestrogenic, suplemen hormone mengawal selia, Omega-3 asid lemak, akupunktur, terapi urut, terapi Ayurveda.</i>
Module 8 Prevention of depression	- Regular exercise/ <i>Senaman</i> ⁵⁷ . - Diet (Food rich in vitamins, magnesium, vegetables and fruits/ <i>Diet (Makanan yang kaya dengan vitamin, magnesium, sayur-sayuran dan buah-buahan</i> ^{2, 63} . - Meditation/ <i>Meditasi</i> ⁶⁵ . - Do not consume alcohol or smoking/ <i>Jangan minum arak dan merokok</i> ⁶⁶ . - Supplements (vitamin, iron, zinc, omega 3-fatty acid food)/ <i>Suplemen (besi, zink, makanan omega asid 3-lemak)</i> ⁶⁷ . - Promote good sleep/ <i>Mengalakkan tidur yang baik</i> ⁶⁸ . - Develop skills to handle stress in positive way/ <i>Mengembangkan kemahiran untuk mengatasi tekanan dengan cara yang positif.</i> - Monitor screen time/ <i>Mengurus masa skrin</i> ⁶⁹ . - Don't isolate yourself/ <i>Jangan mengasingkan diri anda.</i>

Table 2: Modules of KDA-Puzzles





MODULE 5
PHARMACOTHERAPY & MEDICATION TREATMENT A

DEPRESSION

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SSRIs

- Escitalopram (Lexapro)
- Citalopram (Celexa)
- Vilazodone (Viibryd)
- Paroxetine (Paxil, Pexeva)
- Fluoxetine (Prozac)
- Sertraline (Zoloft)

SNRIs Drugs

- Duloxetine (Cymbalta)
- Venlafaxine (Effexor)
- Desvenlafaxine (Pristiq, Khedezla)

Tricyclic Antidepressants

- Desipramine (Norpramin)
- Imipramine (Tofranil)
- Trimipramine (Surmontil)
- Protriptyline (Vivactil)
- Nortriptyline (Pamelor)
- Phenelzine (Nardil)
- Tranylcypromine (Pamate)
- Isocarboxazid (Marplan)

Monoamine Oxidase Inhibitors

MODULE 6
MEDICAL TREATMENT B

DEPRESSION

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PSYCHOTHERAPY

- Talk therapy & Cognitive behavioral (CBT)
- Interpersonal therapy
- Psychodynamic therapy
- Group therapy

FAMILY THERAPY

- Family session
- Help loves one learn about how depression affect.

COGNITIVE HYPNOTHERAPY (CH)

- Recent discoveries from neuroscience
- Effective element of CBT, positive psychology, Gestalt, Traditional Hypnotherapy & Neuro-linguistic Programming (NLP) which increase self motivation.

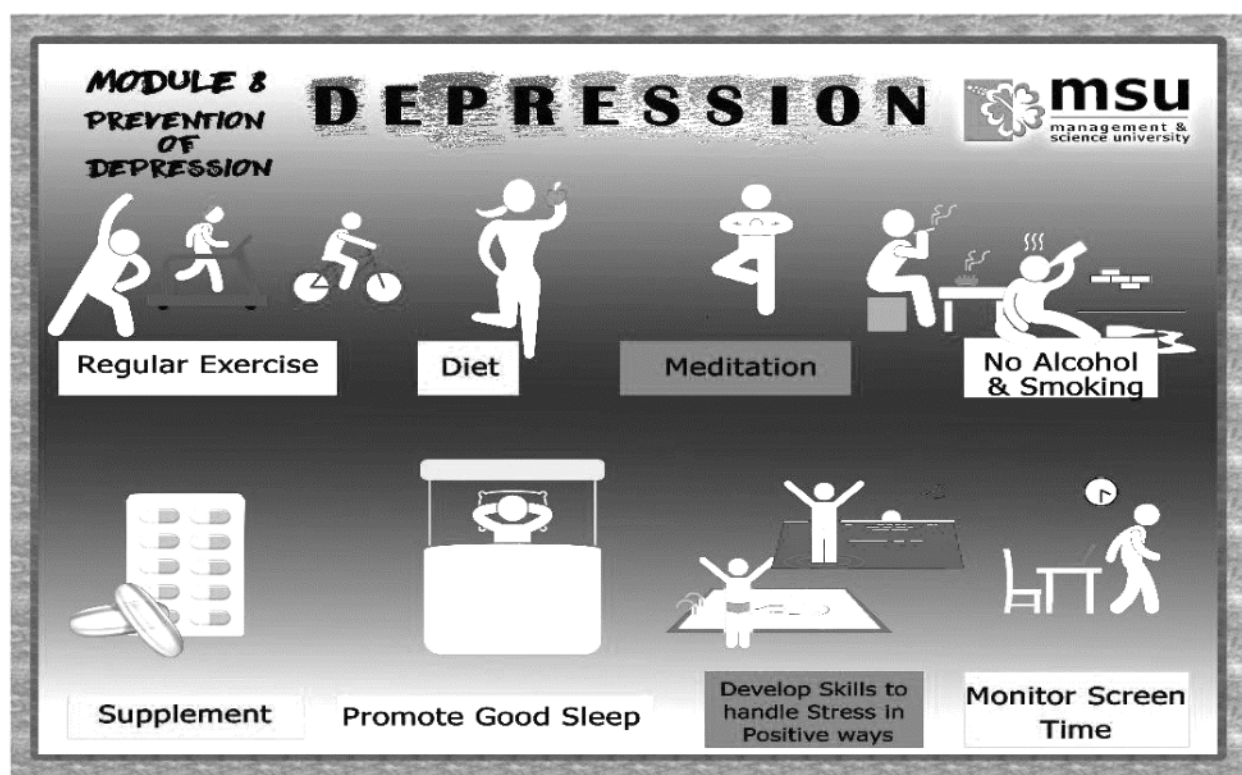
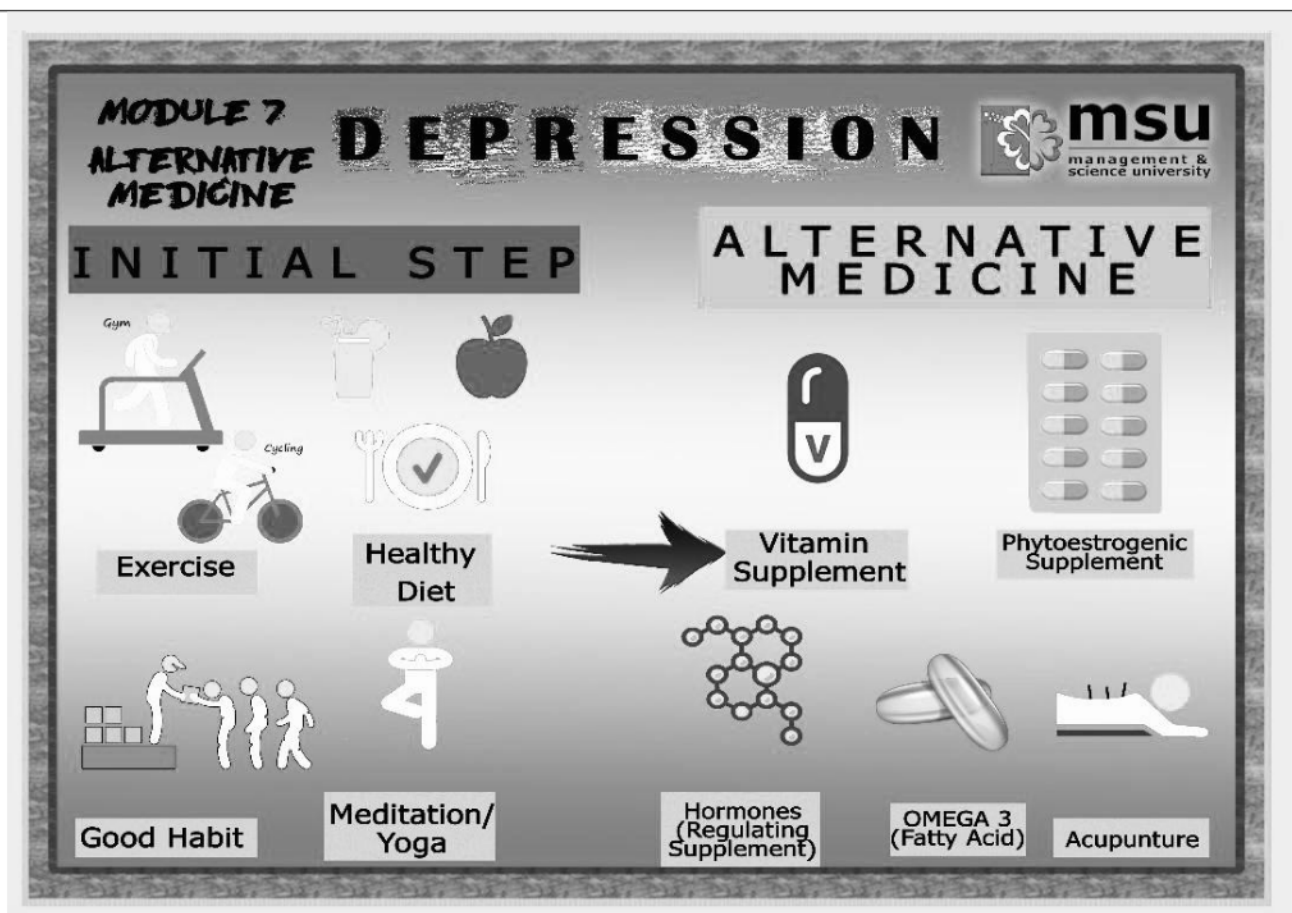


Table 3: Validity of KDA-Puzzle

Validity	Respondents	Comments
Face validity	10 respondents	• Colourful and attractive. • Clear and easily understood the information from the picture. • The pieces were large. The colours help to fix the puzzles easily. • The information understood well. Since there was translation for the information, it was helpful for those who didn't understand the word in one language. • The puzzles were truly beneficial which help the developing adolescents can understand well about depression. This puzzles create more awareness on depression among people. • This puzzles taught a lot of details about depression which they didn't know. For an example there were many types of depression with the symptoms as well. Treatment and prevention available for depression, which can be very useful for the adolescents. • Can educate themselves and also the people around through this puzzles about the depression • Will recommend and suggest this puzzles to other adolescents.
Content validity	Experts: The content validated by experts in this field	• Based on the experts comments the puzzles really beneficial for the adolescents where they can learn about depression in details to make the students aware on the knowledge of depression. • The contents were clear, appropriate and accepted. • The value calculated $r=.81$

DISCUSSION

Content and puzzles development

Mental health education was effective and successful in increasing mental health knowledge, help seeking attitudes, decreased stigma and also increased willingness to help others^{64, 70}. The content and puzzles on knowledge of depression was developed based on many studies and findings.

In previous research, a Game-based school program (Moving Stories) was done in year 2019 among high school students in Dutch. A positive improvement in real help-seeking and first aid actions was obtained from the study⁷¹. However, our research more unique in term of effectiveness as respondent can gain knowledge together improve their attitude level.

Previous study about depression intervention focused on web based stress and depression literacy in year 2016 and it was concluded that the symptom of depression improved⁷². When compared to our KDA-puzzle the intervention can be done without depending any devices or internet services and cost effective as well. In comparable to other studies in year 2019, Digital game-based and school-based mental health

enhancement intervention has been done, together a strong correlation with increased mental health awareness was found⁷³. However, our study do not require devices or network, cost effective, easily available and more effective in term of gaining complete knowledge about depression.

There was no puzzle based education program of intervention has been done before on depression in Malaysia especially among adolescents. The advantages of this KDA-Puzzle were self-learning modules and the input can easily understand by referring to the cartoon pictures created together with the translation of national language provided.

Feasibility and acceptability of KDA-Puzzle

Based on face validity, respondent had responded positively on the KDA-Puzzle. This finding showed the urge on knowing the usage of the KDA-Puzzle. KDA-Puzzle can obtain in low cost and can bring along anywhere without depending on the social network⁷. This puzzle known as time saver as well because the pieces were big and every set of puzzles have own colour where respondent can solve it easily. Puzzles were highly recommended by doctor to keep your stress level under control, where it help to improve the mental health. This

was because puzzles help a person to focus on only one thing and engaging mind to create a sense of calm and serenity which help to reduce stress⁶.

Feedbacks shows that KDA-Puzzle found to be attractive, most of them liked it and the pictures also clear where they can easily understood the information from the pictures itself. The language was straightforward and easy to understand as translation to national language included for those who don't understand English. KDA-Puzzle found to be beneficial for respondent as it enhanced more knowledge on depression which help them. Respondents also agreed that KDA-Puzzle taught a lot new information about depression. For an example, on the types of depression, causes, sign and symptoms. They also learnt the type's treatment available where they did not aware about it before. When the adolescents were asked do they want to own the KDA-Puzzle and suggest to other adolescents, their feedback were positive.

Based on the expert's comments, KDA-Puzzle found to really beneficial for adolescents as they can gain more knowledge about depression and to improve their attitude level. Therefore, this feedback gave an good impact that newly develop KDA-Puzzle in form of informative puzzles enhanced knowledge and attitude level of depression among adolescents effectively as it is current trend nowadays as many people were suffering from depression⁷.

CONCLUSION

As a conclusion, KDA-Puzzle received positive feedback from the assessment where it indicated the newly develop KDA-Puzzle were feasible and acceptable among adolescents. Therefore, this intervention has promising role as an effective education tool for its cost effective and use repeatedly.

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COMPETING INTERESTS

There is no conflict of interest.

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