**Psychological Aspects of Obese Primary School Children Pre- and Post-MyBFF@School Intervention Programme: A Pilot Study**

**Abstract**

Childhood obesity has been seen as a public health challenge in most of the developed and developing countries including Malaysia. This is due to the fact that childhood obesity can result in long term negative effect during adulthood. Thus, early intervention at the primary school stage is essential to prevent obese children from growing up into obese adults. The objective of this study was to analyse the psychological aspects of the obese students during pre- and post-intervention of the MyBFF@School, a school-based intervention program to combat obesity among children. The respondents comprised of 67 apparently healthy overweight and obese students aged 9-11 years old with BMI above the 85th percentile according to the WHO BMI chart. Stirling Children’s Wellbeing was used to measure the constructs of positive outlook, positive emotional state and social desirability. Correlation between positive outlook, positive emotional state and social desirability was significantly higher during post-intervention compared to pre-intervention. This finding is crucial as strengthening the wellbeing of the respondents can sustain their involvement in the program. The findings further strengthened the evidence of positive impact of a school-based intervention program which incorporated physical, nutrition and psychological components.

Keywords: Childhood obesity, positive outlook, positive emotional state and social desirability

**Introduction**

Childhood obesity has been categorised as one of the most significant public health problems faced by the many countries of the 21st century. The rapid growth of paediatric obesity has drawn worldwide attention as obesity is closely associated with type 2 diabetes, hyperlipidemia, hypertension and adult obesity. At the same time, obesity can also result
negative impacts on psychological health (1, 2). Sirikulchayanonta, Ratanopas, Temcharoen and Srisorrachatr found that obese children tend to have lower self-discipline in eating habits, time and money management (3). Besides that, Children’s emotional well-being, self-esteem and quality of life can deeply influence by childhood obesity (4).

A study by Strauss (1) reported obese children with decreasing level of self-esteem shown significantly higher degree of sadness, loneliness, and nervousness and are more likely to engage in high-risk behaviours such as smoking or consuming alcohol. Neumark-Sztainer, Story and Faibisch (5) revealed that obese female often experience hurtful remarks due to stigmatization from peers, family members and teachers. This is due to the fact that obesity is associated with poor body image (6) and most interventions focus on physical health and disregard psychological or social wellbeing, assuming treating the obesity will also treat the mental health problem (7) Thus, interventions programmes need to be held in combating obesity and produce healthy future generation.

**School Based Intervention Programme: MyBFF@school**

“My Body is Fit and Fabulous (MyBFF)” with acronym “MyBFF@school” is a school based intervention programme that aimed to reduce the prevalence of obesity and overweight among primary and secondary students in Malaysia. The primary objective of the intervention is to reduce the body mass index (BMI) z-score and fat mass and to evaluate the effect on the cardiometabolic risk factors. The programme combined three important components, namely psychical activities (small sided game, SSG), nutrition and psychological. The programme is designed at such that enable students enjoy physical activities and practice positive healthy lifestyles through intensive and interactive nutrition and psychological education sessions.

Physical activity is the main component in “MyBFF@school because children should do moderate- or vigorous-intensity aerobic physical activity for at least an hour daily and vigorous-intensity physical activity at least 3 times a week, each time for 30 to 60 minutes as recommended by Physical Activity Guidelines (8) Small-sided football games (SSG), a modified form of classical football, is considered as one of the most ideal mode of exercise for overweight and obese children, providing greater enjoyment, with high level of
participation and energy expenditure (9). SSG is easy to conduct as it required small space and involved lesser players (4-7 players per side).

Instilling students with nutrition knowledge and eating habits are equally essential as findings reported unhealthy eating habits and obesity among school children are related (10). Nevertheless, the psychological aspects of the students also needed to be strengthen due to the facts that obese and overweight students are always associated with stigmatizations, interpersonal and work-related discrimination (11), low self-esteem and body image dissatisfaction (12) and depression or other psychological disturbance (13).

**Implementation of MyBFF@school**

MyBFF@school” will be carried out in 2 phases. Phase 1 involved pretesting the program for 32 weeks followed by Phase 2 where the program will be implemented to 12 schools after considering the barriers and challenges faced in Phase 1.

In Phase 1, the students are required to participate in all 3 components of MyBFF@school for 16 weeks under the supervision of trained researchers, then for another 16 weeks’ respective teachers-in-charge of physical education and/or co-curriculum activity will be responsible to continue the programme. Teachers-in-charge are supposed to be with trained researchers or facilitators during the first 16 weeks as to gain experience. Each SSG session will be for an hour, three times a week. The nutrition and psychology sessions are carried out alternately for 30-45 minutes each session, twice monthly. All sessions are conducted after school hours between 3 to 6.30 pm, within the school premises. Teachers-in-charge and counsellors from each school are expected to continue the session for the remaining 16 weeks of phase 1. The program had obtained ethical approval from the national Medical Research and Ethics Committee of Ministry of Health Malaysia.

The major objective of the present study is to compare the correlation between the sub-constructs of SCWBC namely: positive outlook, positive emotional state and social desirability sub-scale during pre- and post-intervention of MyBFF@school program.
Methodology

MyBFF@school program had obtained ethical approval from the Medical Research and Ethics Committee (MREC), Ministry of Health and Educational Planning and Research Division (EPRD), Ministry of Education, Malaysia. Written informed consent was obtained from parent or guardian and all participating children were also required to sign an assent form. All testing was performed in accordance with the approved guidelines.

Respondents comprised of 67 overweight and obese students with BMI above the 85th percentile according to WHO growth chart and with no medical or physical conditions. They were students aged between 9 to 11 years old from three public primary schools located in Putrajaya. From the total of 67 respondents, 42 are male and 25 are female. Purposive sampling was used in obtaining respondents for this study. The respondents have been identified based on the health records provided by the school.

Data of pre-intervention and post-intervention from the respondents has been collected at baseline and after 16 weeks of intervention. Data were obtained through a survey conducted by the researchers where self-administrated questionnaires were answered by respondents.

The instrument of this study has been developed by a team of researchers based on educational theory and literature review. The questionnaire aimed at collecting information on the respondents’ background, emotional and the psychological wellbeing of the respondents which was measured via Stirling Children’s Wellbeing (SCWBS). The Stirling Children’s Well-being Scale (SCWBS) was developed by the Stirling Council Educational Psychology Service (UK). The SCWBS consists of three sub-components, namely, positive emotional state, positive outlook and social desirability sub-scale which covered the areas of wellbeing including: optimism, cheerfulness and relaxation; satisfying interpersonal relationship, clear thinking and competence. The SCWBC has been translated to Malay Language through the process of back-to back translation. A pilot study has been conducted to validate the instrument.
Results of Research

The reliability of the instrument was assessed using estimates of internal consistency (Cronbach alpha). The cut-off value for Cronbach alpha is .70 and above (14). Data were analysed based on SPSS (Statistical Package for the Social Sciences) to generate the descriptive statistics of the respondents and to achieve the objectives of this study. The instrument has achieved acceptable reliability as the value of Cronbach alpha is .74. (14)

Table 1: Correlation between Sub-Constructs of SCWBC during Pre- and Post-Intervention

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<td>SD</td>
<td>.023</td>
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<td>SCWBS</td>
<td>.808**</td>
<td>.877**</td>
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** p < .001 (2-tailed)

Indicators

PES : Positive Emotional State
PO : Positive Outlook
SD : Social Desirability
SCWBS : Total Children’s Well-Being

Pearson Product-Moment correlation coefficient analysis was conducted to evaluate the sub-constructs of SCWBC during pre- and post-intervention of the program. Table 1 reveals the values of correlation coefficient between all the sub-constructs are positive and most of the values are significant at the .01 level (2 tailed). During the pre-intervention, the highest correlation is between positive outlook and total children well-being ($r = .843$). This implies that there is a strong positive relationship of .843 between positive outlook and total well-being among the obese children. Positive outlook and total children well-being tend to influence each other among the obese children. On the other hand, the correlation between
positive emotional state and social desirability is at the lowest \( r = .023 \) which indicates a weak, positive relationship of .023 between positive emotional and social desirability.

Furthermore, it is also found that positive outlook has a strong, positive significant relationship with positive emotional among the obese children \( r = .507 \). This means positive outlook and positive emotional state can influence each other. However, the correlation between positive outlook and social desirability is quick weak \( r = .153 \). Then again, among the three sub-construct of SCWBS, social desirability has the lowest correlation with total children wellbeing \( r = .404 \). The findings further illustrate that positive outlook has a strong and significant positive correlation \( r = .808 \) with total children wellbeing.

Instead, during the post-intervention, the strongest correlation is between positive emotional state with total children well-being \( r = .877 \), followed by positive outlook and total children well-being \( .863 \) and social desirability and total children well-being \( r = .703 \). The lowest correlation is found between positive emotional and social desirability \( r = .484 \). A significant positive relationship of .578 is found between positive emotional and positive outlook. Beside that, positive outlook also produce significant positive impact on social desirability \( r = .488 \). Thus, the findings have concluded that there is an increase in the values of correlation during post- as compare to pre-intervention among obese children.
Figure 1: Comparison of correlation between sub-constructs of SCWBS during the pre- and post-intervention

Indicators

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Figure 1 reported the comparison of correlation between sub-constructs of SCWBS during the pre- and post-intervention. The analysis shows that the correlation and total children well-being between positive emotional state, positive outlook and social desirability are higher during post-intervention as compared with pre-intervention. The highest increment of correlation is between positive emotion state and social desirability and followed by correlation between positive outlook and social desirability.

Discussion

Analysis of the study reveals that the overweight and obese students’ well-being differs between pre- and post-implementation of “MyBFF@school” which is a school based intervention program. The positive impact of this intervention programme in the psychological aspect has been proved by the significant higher correlation between the sub-construct of positive wellbeing during the post implementation as compare with the pre-period. The findings are supported by Liu et al. (15,) and Jansen et al. (16) where they reported that school-based interventions have been shown to be effective in combating childhood obesity.

The combination of the small-sided football games, nutrition and psychology in the programme have contributed in boosting up the students’ wellbeing. By giving students with more physical exercises, besides instilling them with knowledge of nutrition and right eating habits and strengthen their emotional and psychological aspects, students’ positive wellbeing has been developed. Strengthening obese students’ wellbeing is essential as it will contribute to the sustainability of them in the intervention programmes. This is because research has reported that obese children are usually encounter psychological challenges such as low self-esteem and body image dissatisfaction) (12), social stigmatization, bullying and teasing in
school, discrimination and depression (17) which might result difficulties in sustaining them in any intervention program. Furthermore, obese children are 5 times more likely to report lower global health-related Quality of Life than healthy-weight children (7).

Students’ wellbeing which has been focus in this study is positive outlook, positive emotional state and social desirability. The implementation of the intervention programme has resulted in significant higher correlation between positive outlook, positive emotional state and social desirability during the post stage as compared with the pre-stage. During the pre-intervention period, positive outlook establishes the highest correlation with positive emotional state. It shows that positive outlook is strongly related to positive emotion.

Positive outlook is how we see the world around us and how we interpret what we see. In the process of implementing MyBFF@school intervention in school, all the obese children have been gathered at specific time and venue and there are trained researches and teachers-in-charge to help them. The children feel that they are not being discriminated and alone in tackling their obesity problem, furthermore there are many people care for them and wanted to help them in their problem. According to Strauss (1), decreasing levels of self-esteem in obese children are related with significantly increased rates of sadness, loneliness, and nervousness. Besides that, they involve in lots of physical activities which make them active, knowledge about healthy diet and reinforcement on positive psychological elements develop their confidence and beliefs that they can reduce their body weight. Thus, it develops and further enhance their positive emotion as compared to before they join the intervention program.

The correlation between positive outlook and social desirability also found to be significant higher during the post intervention of MyBFF@school as compared to pre-period. This is another positive outcome of the intervention program because during the activities of the physical, nutrition and psychology components, students are assembled and they carry out all the activities together with the common objective to lose body weight. This is also the reason for the significant increase in the correlation between positive emotional state and social desirability during the post-intervention. They programme make them more active and provide them the opportunities to meet others and decrease their depression (17) due to loneliness and discrimination. (1) As the students are feeling more positive about their surrounding, they feel more confidence to socialize in their environment increased. Based on
Lewis et al. (7) findings, obese children are found to be lack of appreciation of low confidence, self-esteem and abilities to interact which caused recommending diet and physical activity ineffective

Conclusion

The findings from this study have evidenced the importance of implementing a school based intervention programme in combatting childhood obesity. However, in strategizing the intervention programmes, there is a need to consider the components to be included such as the nutrition and psychological aspect especially the wellbeing of the students. This is to ensure that the programme is tailored made to the needs of the students. Strengthen the wellbeing of the students in an intervention program is vital as this will help students to sustain in the program.

References


