
Designing School-Based Information Campaign to Prevent Sedentary Lifestyle: A Social Marketing Approach

Alifia Firliani^{1*}, Suharyanti², Ani Fitriyani³

Universitas Bakrie, Indonesia^{1,2}

SDN Cipinang Muara Pagi 15, Indonesia³

Email: alifia.firliani@bakrie.ac.id, suharyanti@bakrie.ac.id, anifitriyah1612@gmail.com

*Correspondence: Alifia Firliani

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ABSTRACT

Childhood and adolescent obesity is an increasingly critical public health challenge in Indonesia. Among its contributing factors, sedentary lifestyle is often overlooked compared to nutritional aspects. This study aims to evaluate the effectiveness of an informational campaign designed to promote active lifestyles as a strategy for obesity prevention among 4th and 5th-grade students in a suburban Jakarta school. The intervention was developed collaboratively with the school community, leveraging social marketing principles to ensure a theory-driven and effective approach. The half-day program included customized information delivery for children, outdoor games, and interactive sessions supported by teachers and staff. The evaluation employed both quantitative and qualitative methods through pre- and post-activity questionnaires, observations, and interviews. Results showed a significant increase in students' knowledge about the benefits of physical activity, along with improved attitudes and intentions to adopt more active behaviors. Teachers also reported heightened awareness and integration of healthy habits into the school routine. The findings demonstrate that short-term informational interventions can yield meaningful outcomes in raising awareness and initiating behavioral change in children. This research provides a replicable early model for similar urban-fringe settings and highlights the importance of school-based initiatives in addressing childhood obesity.

Keywords: Obesity Prevention; Sedentary Lifestyle; Active Lifestyle; Social Marketing; School-Based Campaign; 4P Marketing

INTRODUCTION

The Government of Indonesia (GoI) aims to reduce rates of obesity by 3 percent per 2030 (Kemenko PMK, 2023). Obesity is defined as a BMI greater than 25 (World Health Organization, 2024). The prevalence of obesity across children in Indonesia is concerning. The number across school-aged children makes-up 20 percent of the group's population and is highest in Southeast Asia for children under 5 (UNICEF Indonesia, 2022). Number of children between 5-12 have continued to rise from 8 percent in 2013 to 9 percent in 2018. According to the World Health Organization, Indonesia is facing a double burden of malnutrition—a concept that describes the coexistence of undernutrition, such as stunting, alongside high prevalence of overweight and obesity (World Health Organization, 2024). While efforts to tackle stunting has very promising progress over the last years (Kementerian Kesehatan, 2018; Sartika et al., 2021) addressing the issue of obesity is receiving less attention.

Obesity also has multifaceted implications. The dangers of obesity among children is greatly cited across literature (Bays et al., 2024; Headid III & Park, 2021; Petridi et al., 2024; Reyes-Angel et al., 2022) which include early onset of diabetes type 2 and cardiovascular disease (Bartkowiak et al., 2021; Bays et al., 2024; Petridi et al., 2024) certain chronic illnesses (Kaplan et al., 2020) and mental health disorder (Kang & Kwack, 2020). It not only affects current and long-term physical health but

also education outcomes (Cohen et al., 2021). They are prone to develop eating disorders, depression and low self-esteem (Klein et al., 2023). Vast evidence suggests that Children who are obese are found to have lower immune system, which results in frequent illnesses that affect school attendance and academic achievements (Cohen et al., 2021).

While obesity is due to various factors combined, sedentary lifestyle is a widely recognized cause behind obesity (Hanifah et al., 2023; Pandita et al., 2016). A sedentary lifestyle is defined as an accumulative measure of expending energy less than 1.5 METS (Hanifah et al., 2023). Studies have reported that 57 percent of Indonesian children do not meet this threshold, meaning they do not engage in adequate physical activity (Kementerian Kesehatan, 2018).

The impact of technology in shaping a child's lifestyle, including motivation to engage in physical activity is reported in several key literature work (Hanifah et al., 2023). Longer and heavier use of gadgets are great contributors to a sedentary lifestyle (Górnicka et al., 2020). Children who engage in long hours of screentime are also more likely to consume food high in sugar and low in nutrition value, further increasing their risk of obesity (Jakobovich et al., 2023). The recent pandemic has also contributed to the rise of sedentary lifestyle (Hanifah et al., 2023). Other determinants include having adequate support from family, peers and other support system such as school (Hanifah et al., 2023).

Addressing obesity should remain a priority agenda within public health due to their significant health and education burden across children. Prevention remains the most effective approach to addressing obesity (Endalifer & Diress, 2020). Raising awareness through information intervention ensures an effective obesity control efforts (Endalifer & Diress, 2020; Liu et al., 2022). When designed effectively, information intervention in obesity prevention can have promising effects (Liu et al., 2022). There are various factors that may enhance the design of an information campaign such as using a multidisciplinary approach (Rapisarda et al., 2021). A multidiscipline approach can be defined in different ways. One way is when various field of disciplines is incorporated as frameworks in the design of the program. Other important factor in conducting an effective intervention is involving the community, such as schools in the development to ensure the program is locally tailored (Rapisarda et al., 2021).

Recognizing the urgency to address sedentary lifestyle, we conducted an information campaign on obesity prevention targeted at students in grade 4 and 5 in an elementary school located in a rural part of Jakarta, SDN Cipinang Muara Pagi 15. This intervention, co-designed with the school's team of teachers is aimed to inform students about the risks of obesity and benefits of an active lifestyle.

Previous studies have highlighted the effectiveness of school-based health interventions and the role of information campaigns in obesity prevention. For example, Liu et al. (2022) demonstrated that health promotion messages tailored to children can increase knowledge and intentions to adopt healthier lifestyles. Rapisarda et al. (2021) emphasized the importance of multidisciplinary and community-based approaches in designing impactful health education programs. However, these studies often focus on dietary behaviors and lack specific emphasis on sedentary lifestyle reduction through targeted physical activity promotion. Moreover, literature remains limited in applying social marketing frameworks in designing school-based campaigns in Indonesia, especially in peri-urban settings. This study fills these gaps by implementing and evaluating a theory-driven, socially marketed information intervention that targets sedentary behavior reduction and promotes active living among elementary school children in suburban Jakarta. By co-designing the program with school stakeholders and integrating principles from behavioral science, communication, and public health, this research offers a novel, contextually tailored model for obesity prevention.

Our approach focuses on encouraging children to live an active life, with an additional effort to build school's intent and capacity in enabling this objective. As some literature suggests that obesity prevention efforts often place greater weight on nutritional aspects than physical activities (Kumari Ekanayake et al., 2023; Paduano et al., 2021), our program will fill in this gap. In designing the intervention, we used key principles in social marketing. Social marketing is a multidisciplinary field that combines approaches in marketing, public health, and behavioral insights. The scope of social marketing is intended for interventions that aim for behavior changes and ultimately offer benefits for

the larger society. This aligns with our understanding across literature that suggest the importance of applying various disciplines in a health education interventions. This study aims to evaluate the effectiveness of an informational campaign designed to promote active lifestyles as a strategy for obesity prevention among 4th and 5th-grade students in a suburban Jakarta school.

METHOD

The intervention is designed using key principles in social marketing. Social marketing is the application of marketing principles to drive behavior change across targeted audience that benefits individuals and society at large (Kamin et al., 2022) that guided the development, partnership decision and design of the program. Referencing from Social Marketing Principles, we conducted a development process that includes marketing approaches, formative research techniques and audience behavioral insights to develop a communication program aimed to address obesity that targets children.

The process behind designing information intervention can be seen in figure 1.

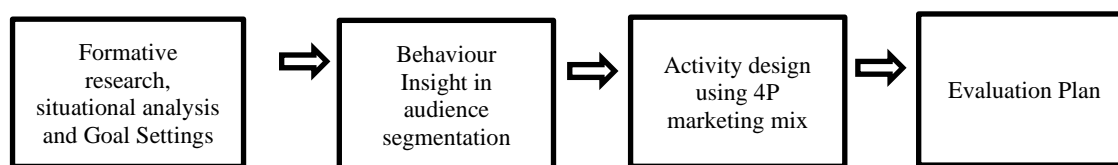


Figure 1. Designing the right intervention campaign to address sedentary lifestyle using a social marketing approach

Development Stage using Social Marketing Approaches

Formative Research and Goal Settings

During the development stage, the team of committee conducted careful formative research to understand the focus issue using secondary sources and performing small data collection. We conducted interview with a group of parents (8) and several members of the school (7) to assess their needs.

According to the parents we interviewed, they believe their children are active as they spend time playing outdoors some days. However, they also acknowledge about are somewhat aware of the benefits engaging in physical activities for their children. However, how much movement is required and what activities are best for their children seem to vary. Some also shared that children should be conserving energy to ensure better concentration at school and that school activities remain adequate to meet their physical activity goals. From parents' self-reporting, we learn that their attitude affects the time children spent playing and being physically active.

We ensure to add our findings with insights from the teachers. Teachers and school staff believe they conduct some efforts in place to motivate children to be physically active. However, they also acknowledge that further efforts can be done. The collaboration with external partners such as through this initiative can add onto current efforts and onwards. A focus issue refers to identifying a sub theme within the broader issue of obesity. In our intervention, we identified children as our focus group because paediatric nutrition in Indonesia is often associated with undernutrition, which then frames obesity as a less urgent issue. We referred to current literature (Hanifah et al., 2023) about current education campaigns on obesity prevention among children. Findings suggest that these campaigns while communicate about all key risk factors, the narratives focus less on the harms of, and risks associated to a sedentary lifestyle. This indicates a room of opportunity and a need to educate on this aspect. Connecting to evidence across literature with findings from our formative research, we generated the program's focus and objectives. Objectives comprise of knowledge (awareness), belief (feelings associated with the desired behavior) and behavior objectives (adoption of the behavior).

There is a knowledge and belief component intended by this program. Our intervention aims to improve awareness about the importance of an active lifestyle to prevent obesity (knowledge). It also aims to help children associate physical activity as something fun and easy to do (belief). To aim for a

complete behavior change requires a more continuous approach and a longer timeline that is beyond the scope of this program. Another complementing exercise to help formulate the right program is to conduct a situational analysis. This process analyzes the strengths and weaknesses (components of the initiative) of this campaign, as well as the opportunities and threats (external factors) that may affect the implementation of the program.

With that, we generated our issue, focus and objectives of this initiative as follows:

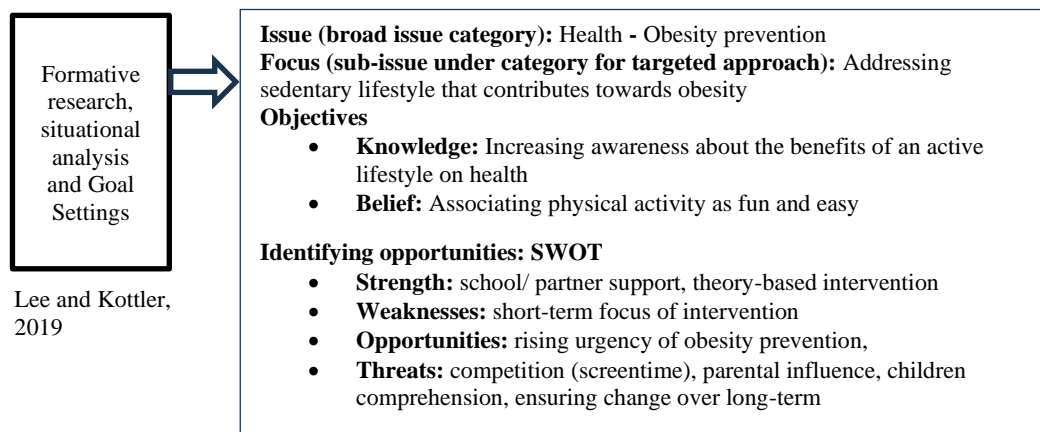


Figure 2. Identifying issue, focus and goal settings

Behavioral Insight: understanding the audience

To ensure the program's effectiveness, we identified and studies the key audience group guided by the Transtheoretical Model (TTM). TTM is a behavioral insight model developed in the 70s by James O. Prochaska and Carlo C to illustrate how change is a process where people move across stages. These different astages are defined by people's readiness to accept a behavior. There are six stages to change, starting from the group who are unaware (precontemplation), aware and are weighing the pros and cons (contemplation), making commitments (preparation), started performing the. behavior (action), preventing relapse (maintenance) and fully succeeded within a period of at least 6 months (termination).

Based on the results of our formative research, parents imply that their children are somewhat active but may spend hours with screen time. Parents also claim, that while they believe there are benefits to staying active, they lack a deeper knowledge about how to strategically incorporate physical exercise, how much is really required to prevent future health challenges and what are the actual risks of a sedentary lifestyle for the future of their parents. Their current beliefs translate onto the behavior and knowledge of their children as they educate or transfer information to shape behavior of their children.

With that, we classified our audience, children in grade 4 and 5 in the preparation and maintenance stage. People in the preparation stage require a "nudge" on how to start. This may be attained through altering their perception that the intended behavior is simple, easy to perform and more importantly fun. The maintenance stage refers to children who are already aware but may require further support to ensure they remain consistent. They can benefit from understanding about available resources, and initiatives that help build their capacities to perform behavior. Based on these identifications, our form of intervention will combine information and demonstrations as to how physical exercise is achievable to incorporate everyday and their association towards this habit is positive.

Following (Lee & Kotler, 2019), we further studied our segment of audience through identifying their their barriers to change, future benefits sought, influential others or people who can influence decisions and competition that may hamper the adoption of behavior. These elements allow us to picture their needs and how to best motivate them, and therefore shape our intervention.

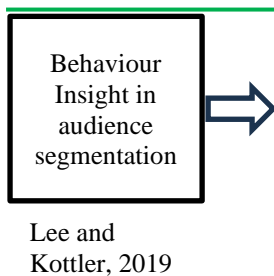


Figure 3. segmenting and understanding audience

Activity Design using 4Ps

The marketing mix 4Ps is a concept that simplifies the marketing practice into four components; product, price, place and promotion. The model is developed to help formulate the activity or intervention using marketing principles. Product refers to intangible or tangible products or services offered to help people adopt a new behavior. Product comprises of core product, actual and augmented. Core product is the message that we want our audience to remember, actual product is the key activities to deliver our message and augmented product are additional activities to support the implementation of our actual product. Price refers to financial or non-financial costs and rewards associated with the new behavior. Place is the location where the intervention takes place and promotion is marketing efforts to improve visibility or take-up of the initiative. One example is through branding and content development. We combined the gain and loss framework in shaping the messaging. This framework explains there are two approaches in shaping message; gain method emphasizes on the benefits of the new behavior and loss method emphasizes on the consequences of failure to adopt (Binder et al., 2020; Fetter et al., 2019).

Our initiative is built through applying the 4P model. Our core message reflects our knowledge and belief objectives, which include three: (1) obesity is not healthy (2) active lifestyle can prevent obesity and that (3) building an active lifestyle can be fun and easy. To deliver the messages (core product) effectively, we aim to develop a one-off interactive information intervention (actual product). An augmented product is not included in this initiative's strategy. We however, engage the school members such as teachers and headmaster to support with the development, execution and post-initiative stage (ie, evaluation plan, ensuring the impact from the intervention can sustain in the medium-term). This can serve as important support to the success of the actual product execution (information intervention).

For optimum participation, we ensured that the financial and non-financial costs associated to taking part in the program for students is lower than the expected rewards. This includes the costs that the school may have to endure in conducting the program. Possible costs of attending the program for students include time spent otherwise for class learning or play time. This is also associated with the opportunity cost for teachers as they are assigned with pre-determined learning outputs and objectives. As this is a one-time session that takes less than half a day, the above losses are not significant. Outside of important information, we wrapped the dissemination session through an interactive format which offers entertainment value for children. The sessions will also emphasize on teamwork which offers another set of benefit in the form a new skill building for children.

Our initiative is conducted in a school setting (place), an environment where students are already familiar with, and therefore, we reduced any perceived inconvenience or costs and therefore

maintained a high level of participation. We set the initiative over half a day to ensure enough time to deliver the information effectively.

To ensure effective promotion of our initiative, we applied branding techniques. We assigned the name of initiative, “Fit for Fun” for it to be short and easy to recall. We also combined techniques from the gain and loss framework by Rothman and Salovey developed in the 90s. There are evidence showing the effectiveness of using gain and loss framework in obesity prevention (Binder et al., 2020; Fetter et al., 2019) which reveals that the gain framework offers high effectiveness. Examples of using the gain framework in messaging to encourage an active lifestyle include highlighting the health benefits, academic potential or others (entertainment, fun value) that might resonate to children. Loss messaging often uses fear. Some of the benefits we highlight across the initiative is divided upon information that is more accurately delivered for children as the key target audience which includes health benefits and experiencing fun or joy. The other benefits that we classified as extended include academic potential and skill-building that is specific on teamwork. As we also incorporate interactive games, learning about teamwork can be additional benefits. However, this may be additional benefits for teachers and the school who are interested in the development of their students. Children are less likely to perceive these skills as beneficial to them.

Our final message design is that for people to remember the following (1) physical play is not only fun, but healthy and that to improve the ease of performing the act, we simplified it to (2) spending a minimum of 60 minutes of play daily. This way, children with the support from teachers and parents can have a better ability to imagine how much physical activity is adequate. We gathered the 60 minutes play daily reference from widely acknowledged scientific evidence (NHS, 2024).

Another component to promotion is ensuring the right messenger. As we are focused in developing a theory-driven initiative, we involved academicians and university students in the relevant field to lead the sessions. They served as educator. Academics and university students are also generally regarded highly in Indonesia by the community and so therefore, their messages will be well accepted by participants.

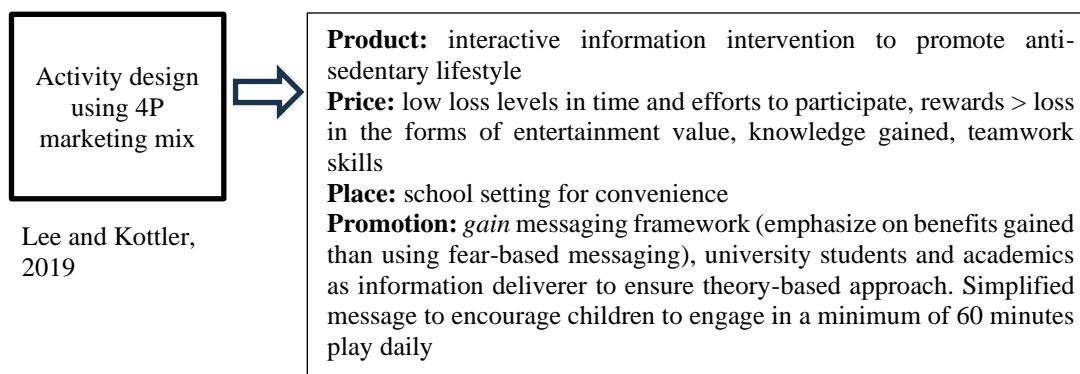


Figure 4. 4P marketing analysis

Evaluation Plan

To identify whether the initiative meets our goals, we conduct an evaluation to identify the possible attitude and knowledge changes among participants. We do this through a pre and post survey that we distribute across the participants. For best practice and ensuring optimum subject protection, we sought the school’s approval and review prior to disseminating the survey. This includes informing the school about the purpose of the pre and post survey and how we aim to disseminate the findings. For additional information, we also conducted a group interview across children and another short interview with key schoolteachers and headmaster to learn about existing efforts and future commitments in supporting obesity prevention across students.

RESULTS AND DISCUSSION

The execution of our initiative is conducted through a half-day session. The duration of the initiative is strategic considering our audience age group. This duration as well as the format of initiative is also advised by the school. Our agenda is divided upon three activities, as described in prior sections. The first session is an education or information dissemination that is conducted in an interactive format to tailor the needs of children as audience. The games section aims to demonstrate how physical activity can be performed among children.

Table 1. Agenda

Information delivery	
Activity Details	Message (benefits of physical activity on health) <ul style="list-style-type: none"> - Information dissemination using interactive format and tailored according to audience age group - Core message: raises the importance of physical activity - Gain messaging framework: emphasizes on the importance of the message benefits, such as health benefits, entertainment, teamwork (skill building) and future benefits in better academic participation.
Games	
Activity Details	Message (physical activity is fun and easy): what constitutes physical activity, how they can be done in a fun method and incorporated in day-to-day routine. <ul style="list-style-type: none"> - A set of games to execute the message delivery. This includes interactive games that introduce movements, teamwork and demonstrate how playing can be a form of physical exercise. - The recommendation to spend 60 minutes of daily play every day
Evaluation	
Activity Details	<ul style="list-style-type: none"> - An interview conducted among teachers to understand the increase in awareness and a shift in attitude about the benefits of an anti-sedentary lifestyle in context of paediatric obesity prevention. Their assessments will also provide some insights on how the initiative potentially improved children's motivation or knowledge in engaging with physical activity. - An interview with a sample of 5 parents as follow-up to understand baseline information (sociodemography of the audience, current attitude, perception and habits related to sedentary lifestyle), as well as potential changes in knowledge, motivation and attitude among their children at home. . - A group interview across participating students to seek their attitude about the initiative, and their future motivation (intent to change) - Analysis of input, output and outcomes of campaign

Source: writer

The initiative was implemented according to plan. On the 26th of November, we conducted the information campaign over half a day in duration starting from 08.00-11.30 AM. SDN Cipinang Muara is a state-owned elementary school located in a high-density, semi-rural area of Jakarta region. The initiative comprises of three activities, including information-campaign, group games and an evaluation session. Team of educators – lecturer and university students delivered messages and led the different sessions to provide information on the benefits of an anti-sedentary lifestyle.

There are a total of 79 participants comprising of students in grade 4 and 5 whom attended the information initiative. There were also a team of school-teachers who participated, and therefore exposed to the messages of our campaign. Their role is key to monitor the conduct of the initiative and further, make sure the sustainability of program impact. As they participated in the program, we sought their assessments from the program, particularly as to whether or not the collaboration improved attitude and future efforts from the school.

During the first part of the session, we delivered information about the benefits of engaging in physical exercise on health, school and overall happiness, aligning with the “gain” messaging framework. The second part of the campaign includes interactive games to demonstrate students how to do exercise in an easy manner and how they can be incorporated in a day-to-day activities. These games require physical movements, teamwork skills and cognitive function. Groups had to compete to win prizes. We also included evaluation as the final session since it takes a while to organize and conduct across a bigger audience.



Figure 6. “Fit for Fun” activities

To understand whether our program achieved its intended objectives, we implemented an evaluation process that entails a few mechanisms. We conducted an facilitated in-person survey across recipients that is collected in a mass setting to understand improvements in knowledge, attitude and motivation to engage in physical activities. In addition, we conducted an interview across facilitating teachers, and a sample of 5 parents. The insights from parents and schools are greatly important to ensure prolonged impact from the activity.

This interview process allowed us to understand how the initiative potentially improved the knowledge, attitude and motivation across children, from the perspective of childrens’ primary (adult) support system. Seeking this information from children has its limitation due to differences in comprehension, and also challenges in approval process.

Table 2. Results from the evaluation

Information and data collection methods	Baseline (pre)	Post-Campaign	Notes
Students Motivation and Parents Support (Parents interview): <ul style="list-style-type: none"> - Level of physical activity and gadget use - Attitude, knowledge and motivation change from the initiative - Parents support 	<ul style="list-style-type: none"> - Children sometimes spend time playing outdoors (3-5 times a week), play sports (1-2 times a week), help with chores and play indoor (daily) - Children own a smartphone and has social media - Parents believe their children engage in 	<ul style="list-style-type: none"> - No significant change in the quantity of movements, nor gadget use but parents report noticing some improvement in knowledge and attitude - Parents however believe their children should seek more active play, sports 	Slightly Improved

Information and data collection methods		Baseline (pre)		Post-Campaign	Notes
		adequate physical activity			
Students Motivation and School support (Teachers interview):	-	The school has some existing efforts that promote physical activity	-	The school will increase current efforts that promote physical activity	Improved
- School support			-	Physical exercise should be given greater priority (should be placed second after academic performance)	
- Students motivation, knowledge and attitude	-	Physical exercise is not a priority (fourth after academic, competition participations, character building and religion)			
Knowledge, attitude, Motivation / Intent to change behavior (in-person survey across students)		Some (34) understood the obesity implications and basic risk factors		All (79) understood the obesity implications and basic risk factors	Improved
		Some (36) want to improve their current habits		All (79) want to improve their current habits	
		Majority (68) associate physical activity as positive		All (79) associate physical activity as positive	

Source: writer

According to the results of this evaluation, we concluded significant increase in knowledge, slight increase in attitude (perceived positiveness) and great increase in the intent to change (willing to improve). The pre-survey also allowed us to capture an insight into their existing behaviors that may be associated with their lifestyle, such as ownership of smartphones etc.

We did not collect a comprehensive set of data to be included in this study as this is beyond the purpose of our activity, and considering limitations in time and the interests of the school. Our current evaluation mechanisms captured all the intended outcomes, such as small attitude, motivation and knowledge changes at school and home settings. We also collected information on changes of parents and the school's attitude, and therefore support in motivating children to live a non-sedentary lifestyle.

Based on the results from parents interview (5), we found that the activity slightly improved children's knowledge and attitude in physical activities when they were asked by parents at home. However, parents did not see any changes in the behavioral level. This is to be expected as this is beyond the scope of our activity and behavioral level changes normally take a longer period of time and is rarely an instant process.

We also conducted additional interview with the teachers and headmaster to complement our findings. All teachers who participated in the session (3) and headmaster (1) agreed that the collaboration was important, the issue of obesity prevention and its relationship to sedentary lifestyle requires more efforts. They acknowledge positive response from their students during and after the delivery of the initiative. They also believe the collaboration served as a 'refresher' for them to incorporate more education and activities on getting children to move more.

We also sought information from students as primary recipient of the initiative. We found that the initiative improved their knowledge which is measured from whether they correctly understood the risk factors of obesity and its implications. From baseline at only 34 out of 79 correctly answered, we were able to increase this number to the full 79 participants. From 36 students who stated they would like to increase current habits prior to the campaign, the whole 79 reported wanting to change to be more active by the end of the session, by staying away from gadgets and playing more at home. There

was moderate improvements for children's association of physical exercise (as something positive), from 68 at baseline to 79 by the end of the campaign.

Our initiative also shows how a simple informational activity can still offer early stage, potential effects towards shaping people's behavior. We attributed the change in knowledge, attitude and intent to improve due to a combination of using social marketing approaches and other supporting techniques such as event management and administration knowledge. Social marketing techniques allow us to generate an initiative that is accurately targeted, theory-driven and systematically built.

Using marketing principles in developing an initiative with social benefits is applicable because of the similarities in how field of disciplines work. Both conventional marketing and social-based marketing acknowledge the importance of segmenting audience and tailoring approaches to this segment. Second, they encourage a systematic process from inception to evaluation which emphasizes on scientific methods. In traditional product developments, marketers conduct market research which includes understanding people's purchasing behaviors. They also evaluate the performance of their marketing initiatives through surveys and other supporting secondary data.

They, however, have their distinct characteristics, such as the objectives of running a marketing initiative. While commercial marketing aims to sell products and services in return for financial gains, social marketing is applied mostly in the development sector aimed to introduce a change with social values for the wider society. Another significant difference is that in social marketing, practitioners must possess an adequate understanding of the issue and context. For example, in the case of obesity prevention, we require some understanding about the context, current policies and regulation and best practices in addressing obesity and the realm of health. In commercial marketing, knowledge about market conditions and people's behavior are required. This knowledge is also covered under social marketing, but we refer to 'contexts' in substitute to 'market'.

"Fit For Fun" is an initiative that is also built from applying behavioral models. There are various behavioral models that aim to study people's motivation. We used the stages of change to identify current levels of awareness so we can predict a strategic approach as solution. According to our formative research process, our audience fall within the preparation and maintenance. The model suggests that information interventions remain relevant across the two stages, although they should also be supported through capacity building methods and other forms of personalized support (Kleis et al., 2021). Demonstrating examples of physical plays and getting children to experience the fun can shape and shift attitude or their associated beliefs.

We measured the success of the campaign through an increase in knowledge and belief indicators. The knowledge components include basic and simple level of awareness such as whether they understand the long-term effects of playing on their phones without moving their bodies, the benefits of physical play, and what obesity may look like and why it is harmful for them. Belief components measure whether children associate physical activities as something positive or negative. The campaign aims to increase the two. We did not include behavior change as our goal in this program as that would take months for the effect to show. Target setting is a key part in predicting the success of the intervention. Objectives of an information campaign should follow the general SMART rule (specific, measurable, achievable, relevant and time sensitive), which includes setting realistic targets. Shaping a change in behavior requires long and great efforts. Often, interventions should be conducted over multiple sessions to ensure a more effective learning model. This is also argued in the stages of change or transtheoretical theory, where a person can be considered successful in adopting a new behavior if only, he or she has been performing the act continuously for a minimum of 6 months (Lee & Kotler, 2019).

Conducting the formative research prior to the development on top of gathering secondary data-based information allow us to generate better depth of message and tactics. Findings informed us how to formulate a more targeted program. Using the 4P marketing model further enhanced the design. The framework is what guided the process of considering the barriers people face, benefits they seek, motivations, the key influential actors and possible competitions that may threaten the adoption of favorable behavior. The model also offers strategies on how to maximize the take-up of interventions, such as having augmented product which is a supporting component under the first P (product) to ensure

people understand how to utilize messages (ie transforming message into action). There is also weighing the costs and rewards (price), determining the location where decision of performing the behavior often take place to increase the chance of the behavior being adopted (ie, school vs outside school and offline vs online). The promotion component of the model guides the messaging process to make sure that complex information can be transformed into something that is easily recalled and performed (ie the “Fit for Fun” branding, and messages such as spending a minimum of 60 minutes play daily).

From the above descriptions, we showed how we can combine different models or insert a smaller level model within the grandeur theories. We applied the loss and gain messaging framework in expanding our promotion component. The model suggests that highlighting benefits or potential future gains can be more effective in obesity prevention (Binder et al., 2020; Fetter et al., 2019).

Attaining lessons learned or key insights during the development stage (input) is also important. Input components may include budget realizations, team performance and collaboration, quality of sessions, and the role of educators during the intervention. In addition to using scientific approaches such as existing theories and models, we also acknowledged the importance of having event management skills and administrative knowledge, particularly during the preparation stage. These serve as supporting techniques in ensuring a successful flow of activities. A successful activity allows participants to accept the messages more effectively and improve learning process. Administrative knowledge is key to actualize partnership. Building collaboration between school and university required some administrative process, such as submitting letter of support, seeking approval from surrounding community and the school. Targeting children in an information campaign also poses a set of challenges in the approval process. We sought approval from parents and the school. We also sought consent from the students themselves to seek their knowledge and views about the issue. This required us to also adjust the program according to advice from parents.

CONCLUSION

There remains vast opportunity to contribute towards paediatric and adolescence obesity prevention, especially in the peri-urban areas where risks of obesity are high due to socioeconomic factors. Sedentary lifestyle is This initiative can serve as an initial lesson learned in building a school-setting information intervention in building an active lifestyle and contribute towards paediatric obesity prevention. Our initiative is developed using key social marketing approaches – a field that combines marketing techniques, communication science and behavioral theories to generate a theory-driven and targeted program to engage in physical activities. We found that when designed effectively, children were more likely to participate in the activities, improve their knowledge about the importance of engaging in adequate physical activities and associate physical exercises as positive. This collaboration also generated a strategic collaboration with the school who is an important support system for children.

Marketing approaches can be considered when thinking about designing behavioral change interventions. Theories that aim to understand people’s motivations and their environmental surroundings aid in guiding the process, directions and strategies in the initiative development. This is because understanding people’s intrinsic motivations can be difficult without the help of evidence and proven theories. A key part in implementing effective marketing approach also lies in recognizing realistic goals.

Ensuring community collaboration is also significant in determining the success of initiative. The community plays a key role in delivering and promoting important messages. Their support may translate into commitments to help drive change. In our initiative, working together with the teachers and school members help attain support from parents, ensured high participation and engagement from children and their support may extend post intervention in the forms of follow-up activities.

Finally, addressing obesity requires multi-level approaches and time to produce full changes in outcomes. Providing education is only one step and component to the larger scheme of obesity prevention. Continuing current efforts, practitioners may consider combining other techniques that center of providing support to address specific barriers. This may include promoting the use of digital technology to help people monitor and track their health. For example, through enhancing the role of teachers and parents as children’s key support system to educate and guide children’s decisions as well

as build healthy lifestyle. Another highly important component is ensuring that people's commitment can sustain until they are able to be competent in preventing setbacks to their goals.

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