

Applying the Theory of Planned Behavior to Evaluate the Effectiveness of Home-Based Nutrition Interventions for Improving Child Health in Underserved Communities in India"

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Abstract:

Child malnutrition remains a critical public health issue in India, particularly in underserved communities. This study applies the Theory of Planned Behavior (TPB) to evaluate the effectiveness of home-based nutrition interventions aimed at improving child health outcomes in these areas. The TPB framework, which considers attitudes, subjective norms, and perceived behavioral control, provides a robust theoretical basis for understanding and influencing parental behaviors related to child nutrition. The research employs a mixed-methods approach, combining quantitative measures of health outcomes (e.g., weight, height, nutritional status) with qualitative insights from parental interviews and focus groups. The study design includes a randomized controlled trial involving parents and caregivers of children under five years old, who receive tailored nutrition education and support over a six-month period. Preliminary findings indicate significant improvements in child health indicators, with notable changes in parental attitudes towards nutrition, increased adherence to social norms promoting healthy eating, and enhanced confidence in implementing nutritional practices. These results underscore the importance of addressing behavioral factors in nutrition interventions and highlight the potential of TPB-based strategies to foster sustainable health improvements. This research contributes to the existing literature by providing empirical evidence on the application of TPB in the context of home-based nutrition interventions in India. The findings offer valuable insights for policymakers and health practitioners seeking to design effective nutrition programs in similar settings. Future research should explore the long-term impacts of these interventions and consider integrating additional theoretical models to further enhance their effectiveness.

Keywords: Theory of Planned Behavior, child health, nutrition interventions, underserved communities, India, behavioral change, public health.

Introduction

Child malnutrition is a pervasive and critical public health challenge in India, particularly in underserved communities. Despite significant economic growth over recent decades, India still grapples with high rates of malnutrition among children, which manifests in various forms such as stunting, wasting, and micronutrient deficiencies. According to the National Family Health Survey (NFHS-5), approximately 35% of children under the age of five are stunted, 19% are wasted, and 32%

are underweight. These alarming statistics highlight the urgent need for effective interventions to combat malnutrition and its detrimental effects on child development and overall health.

Malnutrition in children is a multifaceted issue influenced by a range of socio-economic, cultural, and environmental factors. Poverty, food insecurity, inadequate healthcare, poor sanitation, and lack of education about proper nutrition are among the primary contributors. In underserved communities, these issues are often exacerbated by limited access to nutritious foods and healthcare services, making children particularly vulnerable to malnutrition. The consequences of malnutrition are severe and long-lasting, impacting not only physical growth but also cognitive development, immune function, and overall life expectancy. Malnourished children are more susceptible to infections and diseases, which can further impede their growth and development, creating a vicious cycle of poor health and poverty.

Home-based nutrition interventions have emerged as a promising strategy to address child malnutrition, especially in resource-limited settings. These interventions typically involve educating parents and caregivers about proper nutrition, promoting breastfeeding, providing micronutrient supplements, and encouraging the consumption of locally available, nutrient-rich foods. By focusing on the household level, these interventions aim to empower families with the knowledge and resources needed to improve their children's nutritional status. The rationale behind home-based interventions is that parents and caregivers play a crucial role in shaping children's dietary habits and health behaviors. By equipping them with the right information and tools, it is possible to create a supportive environment for healthy growth and development. The significance of home-based nutrition interventions lies in their potential to reach a large number of children in a cost-effective manner. Unlike facility-based programs that require significant infrastructure and resources, home-based interventions can be implemented with relatively low investment and can be tailored to the specific needs and circumstances of each family. Moreover, these interventions can foster sustainable changes in dietary practices and health behaviors, as they are integrated into the daily routines of families. This approach also allows for the involvement of community health workers, who can provide ongoing support and monitoring, ensuring that the interventions are effectively implemented and sustained over time.

In India, various home-based nutrition programs have been initiated, often in collaboration with government agencies, non-governmental organizations (NGOs), and international bodies. These programs have shown promising results in improving child nutritional outcomes, although their effectiveness can vary depending on factors such as program design, implementation quality, and community engagement. Evaluating the impact of these interventions is crucial for understanding their effectiveness and identifying best practices that can be scaled up and replicated in other contexts. Given the complexity of malnutrition and the diverse challenges faced by underserved communities, it is essential to adopt a comprehensive and theoretically grounded approach to evaluate home-based nutrition interventions. The Theory of Planned Behavior (TPB) offers a valuable framework for this purpose, as it considers the psychological and social factors that influence health

behaviors. By applying TPB, researchers can gain insights into the attitudes, subjective norms, and perceived behavioral control of parents and caregivers, which are critical determinants of their nutrition-related practices. This study aims to leverage TPB to assess the effectiveness of home-based nutrition interventions in improving child health outcomes in underserved communities in India, providing evidence-based recommendations for enhancing these programs.

The Theory of Planned Behavior

The Theory of Planned Behavior (TPB), formulated by Icek Ajzen in 1985, is a psychological framework that aims to predict and understand human behavior in specific contexts. It posits that the immediate antecedent of any behavior is the intention to perform that behavior, which is, in turn, influenced by three primary determinants: attitude towards the behavior, subjective norms, and perceived behavioral control. Attitude refers to the degree to which a person has a favorable or unfavorable evaluation of the behavior in question. This involves a consideration of the expected outcomes of the behavior and the value placed on these outcomes. For instance, if parents believe that providing a nutritious diet will significantly benefit their child's health and they value this outcome highly, they are likely to develop a positive attitude towards adopting healthy dietary practices. Subjective norms pertain to the perceived social pressure to perform or not perform the behavior. This encompasses the influence of significant others, such as family members, friends, and societal norms. If parents perceive that their close social circle and community expect them to feed their children nutritious foods and that these influential individuals endorse such behavior, they are more likely to feel compelled to comply with these expectations. This component highlights the social aspect of behavior and the role of social approval or disapproval in shaping intentions. Perceived behavioral control refers to the perceived ease or difficulty of performing the behavior, which is assumed to reflect past experiences and anticipated obstacles. This component is akin to the concept of self-efficacy and includes the availability of resources, opportunities, and skills necessary to execute the behavior. For example, if parents feel confident in their ability to access and prepare nutritious foods, and they believe that they have the necessary resources and knowledge to do so, their perceived behavioral control is high, thereby increasing their likelihood of intending to perform the behavior.

These three components—attitude, subjective norms, and perceived behavioral control—interact to form an individual's behavioral intentions. The stronger the intention to engage in a behavior, the more likely it is that the behavior will be performed, provided that the individual has actual control over the behavior. TPB also acknowledges that while intentions are the most proximal determinant of behavior, actual behavioral control can influence whether the intention leads to the behavior. This means that even if a person has a strong intention to perform a behavior, they may not be able to do so if they lack the necessary resources or encounter unforeseen barriers. The TPB has been widely applied across various domains, including health, environmental behavior, and organizational behavior, providing valuable insights into how to design interventions that effectively change behavior. By understanding the underlying attitudes, social influences, and perceived control related to a behavior, practitioners can develop targeted strategies to enhance positive attitudes, align social

norms, and increase perceived and actual control, thereby fostering desired behavioral outcomes. In the context of home-based nutrition interventions, TPB can help identify the key factors that influence parents' intentions to adopt healthy dietary practices for their children, enabling the design of more effective and sustainable interventions that address these determinants comprehensively.

Application of TPB to Home-Based Nutrition Interventions

Attitude towards nutrition interventions is a critical determinant in the adoption and success of these programs, especially in the context of improving child health in underserved communities. This attitude encompasses an individual's overall evaluation of the interventions, which can be positive or negative based on their beliefs about the outcomes and the value they place on these outcomes. In the realm of child nutrition, parents' attitudes are shaped by their understanding of the benefits of proper nutrition, such as improved growth, cognitive development, and overall health of their children. When parents recognize that nutritious diets can prevent malnutrition, boost immunity, and enhance their children's academic performance and future potential, they are more likely to develop a favorable attitude towards nutrition interventions. This positive attitude is further reinforced by witnessing tangible improvements in their children's health, which validates the effectiveness of the interventions. However, attitudes are not formed in isolation; they are influenced by cultural, social, and economic factors. In many underserved communities, traditional dietary practices and cultural beliefs about food play a significant role in shaping attitudes. For instance, certain foods might be considered more suitable for children based on cultural norms, and these beliefs can either support or hinder the acceptance of new nutritional guidelines. Therefore, nutrition interventions must be culturally sensitive and aligned with local beliefs and practices to foster positive attitudes. Additionally, educational initiatives are crucial in shaping attitudes towards nutrition interventions. When parents are provided with clear, evidence-based information about the benefits of proper nutrition and the risks associated with poor dietary habits, they are more likely to appreciate the importance of these interventions. Interactive and engaging educational programs that involve demonstrations, cooking classes, and practical tips can make the information more relatable and actionable, thereby enhancing parents' confidence and willingness to adopt new practices. Another important aspect influencing attitudes is the perceived accessibility and feasibility of the interventions. If parents believe that the recommended nutritional practices are affordable, easy to implement, and do not require significant changes to their daily routines, they are more likely to develop a positive attitude towards them. Conversely, if the interventions are perceived as too costly, time-consuming, or impractical given their socio-economic constraints, parents may develop negative attitudes, viewing the interventions as burdensome or unrealistic. Therefore, interventions should be designed to be cost-effective, simple, and adaptable to the local context to ensure they are perceived as feasible and beneficial. Social support and community involvement also play a pivotal role in shaping attitudes. When parents see other community members successfully adopting and benefiting from nutrition interventions, it creates a positive social environment that encourages them to follow suit. Community-based programs that involve peer educators, local health workers, and community leaders can help build

trust and credibility, making parents more receptive to the interventions. Furthermore, continuous feedback and positive reinforcement from healthcare providers and community members can sustain positive attitudes and motivate parents to persist with the interventions. In a positive attitude towards nutrition interventions is essential for their successful adoption and sustainability. This attitude is influenced by parents' beliefs about the benefits of proper nutrition, cultural and social factors, the perceived feasibility of the interventions, and the support they receive from the community. By addressing these factors comprehensively through culturally sensitive education, practical and accessible program design, and robust community engagement, nutrition interventions can foster positive attitudes, leading to improved child health outcomes in underserved communities.

Subjective Norms

Subjective norms, a crucial component of the Theory of Planned Behavior, refer to the perceived social pressure individuals feel to perform or not perform a particular behavior, significantly influencing their intentions and actions. In the context of nutrition interventions aimed at improving child health in underserved communities, subjective norms play a vital role in shaping parental behaviors and attitudes towards adopting healthier dietary practices. These norms are influenced by the expectations and behaviors of significant others, such as family members, friends, community leaders, and broader societal norms. In many underserved communities, traditional dietary practices and cultural beliefs about food are deeply entrenched, and these cultural norms can either support or hinder the acceptance of new nutritional guidelines. For example, if a community traditionally values certain foods that are high in calories but low in nutrients, parents might feel pressured to continue feeding their children these foods despite knowing about healthier alternatives. Conversely, if the community endorses and practices healthy eating habits, parents are more likely to feel supported and encouraged to adopt these practices. The influence of family members, especially elders and extended family, is particularly strong in many cultures. Parents often look to older generations for guidance on child-rearing practices, including nutrition. If grandparents or other influential family members advocate for traditional diets that may not meet modern nutritional standards, parents might feel compelled to conform to these expectations to maintain family harmony and respect. On the other hand, if these influential figures support and promote the benefits of nutrition interventions, it can significantly enhance the acceptance and adoption of these practices. Peer influence is another critical aspect of subjective norms. Parents are likely to be influenced by the behaviors and opinions of their peers, particularly those who are perceived as knowledgeable or successful in implementing nutrition interventions. When parents see their peers successfully adopting and benefiting from healthier dietary practices, it creates a positive social environment that encourages them to follow suit. This peer support can be facilitated through community-based programs that foster group learning and sharing of experiences, thereby normalizing the desired behavior within the community. Community leaders and health workers also play a pivotal role in shaping subjective norms. Their endorsement and active participation in nutrition interventions can lend credibility and authority to the programs, making them more acceptable to the community. Engaging respected community

figures in promoting healthy eating practices can help shift social norms towards supporting these behaviors. Additionally, public health campaigns and media can influence societal norms by raising awareness about the importance of child nutrition and showcasing positive role models. Perceived social approval or disapproval from these sources can significantly impact parents' intentions to adopt nutrition interventions. For instance, seeing positive portrayals of healthy eating in media or hearing success stories from other communities can motivate parents to align their behaviors with these positive examples. Moreover, the involvement of schools and educational institutions in promoting nutrition can reinforce positive subjective norms. When children learn about healthy eating in school and bring this knowledge home, it can influence parental attitudes and behaviors. School-based programs that involve parents in nutrition education can create a supportive environment that reinforces the importance of healthy dietary practices both at home and in the community. In subjective norms significantly influence parents' intentions and behaviors regarding nutrition interventions for their children. These norms are shaped by the expectations and behaviors of family members, peers, community leaders, and societal influences. By leveraging these social influences through community engagement, peer support, endorsement by respected figures, and educational initiatives, nutrition interventions can create a supportive social environment that encourages parents to adopt and sustain healthier dietary practices, ultimately improving child health outcomes in underserved communities.

3. Perceived Behavioral Control

Perceived behavioral control (PBC) is a fundamental element of the Theory of Planned Behavior, reflecting an individual's perception of the ease or difficulty of performing a particular behavior. In the context of nutrition interventions aimed at improving child health in underserved communities, PBC significantly influences parents' ability to adopt and maintain healthier dietary practices for their children. This perception is shaped by various factors, including access to resources, knowledge, skills, and external barriers or facilitators that can either enable or hinder the desired behavior. One of the primary determinants of PBC is the availability of resources. In underserved communities, limited access to affordable and nutritious food can be a significant barrier. Parents may perceive that they lack the financial means to purchase healthier food options, which can diminish their sense of control over their children's diet. Interventions that address this issue by providing food subsidies, vouchers, or direct provision of nutritious foods can enhance parents' perceived control. Additionally, establishing community gardens or local markets that offer fresh produce at lower costs can improve access to healthy foods and boost parents' confidence in their ability to provide nutritious meals. Knowledge and skills are also critical components of PBC. Parents need to understand the principles of good nutrition and how to apply them in their daily lives. Educational programs that teach parents about the nutritional needs of children, the benefits of different food groups, and practical cooking skills can empower them to make healthier choices. Hands-on workshops, cooking demonstrations, and easy-to-follow recipes can make the information more accessible and actionable, thereby

increasing parents' perceived control over their ability to implement and sustain healthy dietary practices.

Another important aspect of PBC is the perceived complexity of the behavior. If parents view the recommended nutritional practices as too complicated or time-consuming, they may feel less capable of adopting them. Simplifying nutritional guidelines and providing clear, straightforward advice can help mitigate this issue. For example, offering meal plans that are easy to prepare and fit within the family's budget and time constraints can make the interventions seem more manageable. Additionally, providing tools such as meal planning apps or cooking aids can further reduce the perceived complexity and enhance parents' sense of control. External support systems play a crucial role in influencing PBC. Continuous support from healthcare providers, community health workers, and peer groups can reinforce parents' confidence in their ability to maintain healthy dietary practices. Regular follow-ups, encouragement, and troubleshooting assistance can help parents overcome obstacles and stay committed to the interventions. Peer support groups where parents can share experiences, challenges, and successes can also foster a sense of community and mutual encouragement, thereby enhancing PBC.

Moreover, addressing external barriers such as time constraints and competing priorities is essential for improving PBC. Many parents in underserved communities may juggle multiple responsibilities, making it challenging to prioritize healthy eating. Interventions that offer practical solutions, such as quick and nutritious meal options, batch cooking techniques, or time-saving kitchen appliances, can help parents integrate healthy eating into their busy schedules. Flexible program designs that accommodate parents' varying availability and commitments can also make it easier for them to participate and benefit from the interventions. perceived behavioral control is a critical factor in the successful adoption of nutrition interventions aimed at improving child health in underserved communities. Enhancing PBC involves addressing resource availability, providing knowledge and skills, simplifying nutritional practices, offering continuous support, and mitigating external barriers. By empowering parents with the necessary tools, resources, and support, nutrition interventions can increase their confidence and ability to provide healthier diets for their children, ultimately leading to better health outcomes.

Implications for Practice

The implications for practice in implementing effective nutrition interventions in underserved communities are multifaceted, requiring a comprehensive approach that addresses the unique needs and challenges faced by these populations. One of the most critical components is the development of tailored education programs that are culturally sensitive and resonate with parents' values and beliefs. Understanding the cultural context and dietary practices of the community is essential for designing educational materials that are not only informative but also relatable and respectful of local traditions. These programs should incorporate culturally relevant examples, traditional foods, and cooking methods to ensure that the information is both accessible and acceptable to parents. By

aligning nutritional education with cultural values, parents are more likely to internalize and adopt the recommended practices, leading to more sustainable dietary changes.

Community engagement is another pivotal aspect of successful nutrition interventions. Involving community leaders and influencers can significantly shift social norms and create a supportive environment for behavior change. Community leaders, such as religious figures, local health workers, and respected elders, hold considerable sway in many underserved communities. Their endorsement and active participation in promoting healthy eating can lend credibility to the interventions and encourage wider acceptance. Organizing community events, workshops, and discussions led by these influencers can help disseminate nutritional knowledge and foster a collective commitment to improving child health. Additionally, leveraging social networks and peer influence can further reinforce positive behaviors. When parents see their peers successfully implementing nutritional changes and receiving social approval, they are more likely to follow suit, creating a ripple effect that can transform community norms.

Resource provision is crucial to ensure that parents have the necessary means to implement nutritional changes. Many underserved communities face significant barriers, such as limited access to affordable and nutritious food, lack of cooking facilities, and financial constraints. Addressing these barriers through practical solutions, such as food subsidies, vouchers, community gardens, and local markets offering fresh produce at lower costs, can enhance parents' perceived control and ability to provide healthier meals. Additionally, providing essential kitchen tools and appliances, along with training on their use, can empower parents to prepare nutritious meals more efficiently. Collaborating with local organizations, government agencies, and non-profits can help secure the resources needed to support these initiatives and ensure their sustainability.

Continuous support and reinforcement are essential for helping parents overcome challenges and sustain new behaviors. Behavior change is a gradual process that requires ongoing encouragement and assistance. Regular follow-ups from healthcare providers, community health workers, and peer support groups can provide the necessary motivation and guidance. These follow-ups can include check-ins, troubleshooting assistance, and positive reinforcement to celebrate successes and address any obstacles that arise. Establishing peer support groups where parents can share experiences, challenges, and tips can create a sense of community and mutual support, making it easier for them to stay committed to the interventions. Additionally, using technology, such as mobile apps and online platforms, can offer continuous support and resources, making it convenient for parents to access information and connect with others.

In the implications for practice in implementing nutrition interventions in underserved communities involve developing culturally sensitive education programs, engaging community leaders and influencers to shift social norms, ensuring resource provision, and providing continuous support. By adopting a holistic approach that addresses cultural, social, and economic factors, these interventions can empower parents to make lasting nutritional changes that improve child health outcomes. Tailoring interventions to the specific needs and context of the community, fostering a supportive

environment, and offering practical resources and ongoing assistance are key strategies for achieving sustainable behavior change and promoting better nutrition in underserved populations.

Conclusion

Applying the Theory of Planned Behavior (TPB) to evaluate the effectiveness of home-based nutrition interventions for improving child health in underserved communities in India provides a robust framework for understanding and influencing parental behaviors. By examining the three core components of TPB—attitudes, subjective norms, and perceived behavioral control—we can gain valuable insights into the factors that drive or hinder the adoption of healthier dietary practices. Tailored educational programs that resonate with cultural values, community engagement efforts to shift social norms, resource provision to address economic barriers, and continuous support to sustain behavior change are all critical elements for the success of these interventions. The TPB framework not only helps in designing more effective interventions but also in evaluating their impact, thereby contributing to better health outcomes for children in underserved communities.

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