

Effect of School Screening Programs SMS Alerts on Parental Health-Seeking Behaviour: A Cross-Sectional Study in Medina, KSA

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Abstract

School health screening programs play an essential role in the early detection of health problems among children and in promoting timely healthcare interventions. Recently, digital communication tools such as Short Message Service (SMS) alerts have been integrated into school health programs to improve parental awareness and encourage appropriate health-seeking behaviour. This study aimed to evaluate the effect of SMS alerts from school screening programs on parental health-seeking behaviour in Medina, Saudi Arabia.

Keywords: *Child Health Screening, Digital Health Communication, Early Disease Detection, Mobile Health (Mhealth), Parental Health-Seeking Behaviour, School Health Screening, SMS Alers, School Health Programs, Student Health*

Introduction

Schools play a crucial role in children's health and wellbeing by providing health education, early detection of health issues, and promoting healthy habits, which directly impact their learning, social skills, and overall development. Children face various physical health problems like obesity, vision and hearing impairments, dental issues, and mental health concerns such as depression and anxiety, which can hinder their academic performance and quality of life if not identified early. School-based health screening programs are essential for early diagnosis, timely intervention, and raising awareness among students, parents, and teachers, especially in areas with limited healthcare access. The integration of digital tools, such as SMS alerts in Saudi Arabia's National School-Based Screening Program, aims to enhance parental involvement and promote prompt health-seeking behaviour, though more research is needed to evaluate their effectiveness in improving health outcomes.

Review of Related Literature

This study is crucial as it addresses the gap in understanding how parental responses to SMS alerts after school health screenings impact their health-seeking behaviours in Medina. Insights gained will guide policymakers and healthcare providers to optimize digital communication strategies, improve the effectiveness of school health initiatives, and ultimately enhance children's health outcomes through culturally and geographically tailored approaches.

School health screening programs are widely recognized as essential strategies for early identification of physical and mental health problems among children, enabling timely intervention and improved long-term outcomes. Studies in Saudi Arabia have reported a notable prevalence of health conditions such as obesity, vision impairments, and dental issues among school-aged children, reinforcing the importance of systematic screening initiatives (Al Daajani et al., 2021). Early screening has been shown to play a key role in preventive healthcare by identifying health risks before they escalate, thereby reducing disease burden and improving quality of life (Ali & Shah, 2023). Furthermore, schools provide a strategic platform for health promotion and education, as they reach large populations of children and can influence both student and parental behaviours (Elsayed & Almohaithef, 2019; Alzahrani, 2022).

Despite the availability of screening programs, translating health information into positive parental health-seeking behaviour remains a challenge, particularly in developing and middle-income contexts. Behavioural change is influenced by multiple factors, including awareness, socioeconomic status, education, and cultural beliefs (Aboud & Singla, 2012; Ali & Ali, 2023). Communication strategies are therefore crucial in bridging the gap between detection and action. Behaviour changes communication interventions, including reminders and targeted messaging, have proven effective in promoting health-related actions among caregivers when appropriately designed and culturally adapted (Briscoe & Aboud, 2012).

In recent years, digital health communication tools such as Short Message Service (SMS) have emerged as cost-effective methods to enhance healthcare engagement. Mobile health (mHealth) interventions, particularly SMS alerts, have demonstrated success in improving appointment adherence, treatment compliance, and preventive health behaviours due to their accessibility and convenience. Integrating SMS alerts into school health screening programs offers an opportunity to improve parental awareness and responsiveness, especially in regions with high mobile phone penetration. Additionally, public–private partnerships and technological innovations have contributed to improving access to healthcare services and enhancing communication efficiency (Abass et al., 2024).

However, existing literature highlights that the effectiveness of such digital interventions depends on various contextual factors, including literacy levels, socioeconomic disparities, and health system infrastructure. Health-related barriers, including limited awareness and access to services, can significantly impact children's academic performance and overall wellbeing if not addressed promptly (Gracy et al., 2017). While evidence supports the potential of SMS-based communication, there remains a need for context-specific research to evaluate its impact on parental health-seeking behaviour within school health programs in Saudi Arabia, particularly in cities such as Medina.

Objective

Aim of the Research

- To evaluate the effect of school screening programs SMS alerts on parental health-seeking behaviour: a cross-sectional study in medina, KSA

Objectives of the Research

- to estimate the prevalence of obesity, vision problems, scoliosis, depression, and tooth problems among school students in Medina City.

- to determine the response rate of parents to the recommendation by the school health program.
- to determine factors associated with percent of parents who respond to the recommendation sent through SMS from the School health program.

Methodology

Study Design

This study employs an analytical cross-sectional design to determine the prevalence of health issues identified through school health screenings in Medina and to assess parents' responses to SMS alerts about their children's health conditions. It combines analysis of existing screening data with additional information gathered via phone interviews, providing a snapshot of health status and behaviours at a specific point in time.

Setting

The research will be conducted in Medina City, Saudi Arabia, focusing on schools participating in the school health screening program during the 2024-2025 academic year. Data collection will occur from April to December 2025, beginning with the screening data from the previous year, followed by phone interviews with parents of children diagnosed with health abnormalities, involving both school health authorities and families.

Participants

The sample size for parental interviews was determined to be 380 participants, based on expected response rates, estimated parental response prevalence, and the statistical power needed to identify significant associations. To ensure comprehensive prevalence analysis, all students in the population will be included.

Inclusion criteria include students enrolled in Medina schools who were screened during 2024-2025 and their parents or guardians who received SMS notifications about health abnormalities.

Exclusion criteria encompass those who decline participation, cannot be reached after three attempts, or have incomplete screening records.

Sampling methods involve analyzing the total number of students with health issues for prevalence estimates and randomly selecting 380 parents or guardians of children with health problems for feedback, ensuring representative and unbiased results.

Analysis

Participant Demographics: Over 380 parents, mostly males (67.9%) with an average age of 41.2 years; most had tertiary education, were employed, and had chronic diseases, with many being widowed.

Child Characteristics: The average child age was 13.8 years; most were boys in middle school, with a high prevalence of chronic diseases; many children lived only with their father.

Screening & Awareness: Most parents knew about school health visits in advance and received SMS alerts, mainly from schools, which were generally clear and informative.

Actions Taken: Around 66% of parents responded to SMS, primarily visiting health centres and consulting general physicians, despite facing some difficulties.

Communication & Satisfaction: Parents largely reported satisfaction with SMS communication, preferring it as the method, with higher satisfaction linked to older parental age and health issues.

Response Factors: Male parents, those with more children, higher education, employment, and chronic diseases were more likely to respond and take action; age differences were statistically significant.

Findings and Discussion

This study demonstrates that SMS alerts sent through school screening programs significantly influence parental health-seeking behaviours in Medina, KSA. The high response rate (80.3%) and subsequent actions, such as visiting health centres, suggest that SMS is an effective, accessible, and culturally appropriate communication tool that can prompt timely health interventions. Parental factors such as higher education, employment, and existing health conditions were associated with increased responsiveness, highlighting the importance of literacy and socioeconomic status in health engagement. The findings align with previous research supporting SMS as a cost-effective means to improve health behaviours and service utilization, emphasizing its potential for widespread implementation within school health initiatives.

The results underscore the need for standardized, culturally tailored SMS communication strategies, along with targeted approaches for less responsive groups, such as parents with lower literacy levels. Incorporating additional communication methods and health literacy programs could enhance responsiveness and health outcomes further. While promising, the study's cross-sectional design and reliance on self-reported data point to the necessity for longitudinal and controlled studies to confirm causality and evaluate long-term effects.

Conclusion

The study found that SMS notifications from school health screenings significantly influence parental actions in Medina, Saudi Arabia. Mobile health innovations like SMS are affordable, culturally appropriate, and effective in encouraging parents to seek timely health care for their children, such as visiting clinics and following medical advice. SMS alerts notably improved parental responsiveness to child health issues identified during school checkups. Despite concerns about digital divide issues, the strong positive feedback indicates broad applicability and potential for large-scale adoption, emphasizing the importance of integrating SMS into health programs. Policymakers and health practitioners should prioritize embedding SMS communication into national and school health initiatives. Future research should explore long-term impacts, message customization, and strategies to ensure equitable access, ultimately fostering more efficient and inclusive child healthcare locally and globally.

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