

UNIVERSITI TEKNOLOGI MARA

**COMPARING THE EFFECT OF
PARENTAL REMINDER SMS AND
HEALTH EDUCATION ON
INFANTS' IMMUNISATION
COVERAGE, TIMELINESS AND
PARENT-REPORTED BARRIERS IN
BORNO STATE, NIGERIA**

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ABSTRACT

Despite the known benefits of immunisations, several factors such as forgetfulness, lack of knowledge and myths and misconceptions impede parents or caregivers from accessing immunisation services for their children in Nigeria. This study was designed to compare the effect of parental reminder Short Message Services (SMS) and SMS-delivered health education on immunisation coverage, timeliness and parent-reported barriers among infants in Maiduguri, Nigeria. A three-arm quasi-experimental design study was conducted in three randomly selected health facilities using 786 parents of infants. 262 participants were purposively enrolled in each of the study arms based on eligibility criteria. Data on coverage and timeliness were collected at the end of each visit, while data on barriers were collected pre- and post-test. Collected data were analysed with SPSS version 29 using repeated measure logistic regression, Poisson Z test for rate, and Wilcoxon signed ranks test. The result of the study shows that parental reminder SMS significantly improve immunisation coverage (p-value= 0.001; 95% CI [12.2-40.5]); (p-value = 0.001; 95% CI [32.6-56.9]) and (p-value = 0.001; 95% CI [34.2-54.4]) for the 6th, 10th and 14th-week schedule respectively and significantly improved immunisation timeliness across the 6th, 10th and 14th-week schedule (p-value = 0.001, 95% CI [25.9 – 46.7]), (p-value 0.001, 95% CI [24.2 – 43.0]) and (p-value 0.001, 95% CI [21.1 – 36.9]) respectively. On the influence of gender, compared to the mothers, SMS reminders sent to the fathers yielded statistically significant findings (p-value = 0.038, 95% CI [0.016 - 0.579]). On barriers, SMS reminders were shown to significantly (p-value = 0.001) reduce barriers to immunisation. On the other hand, results on the effect of SMS health education, results show SMS delivered health education intervention improved immunisation coverage for the 10th and 14th week (p-value = 0.009; 95% CI [3.4 – 23.3]) and (p-value =0.001, 95% CI [14.2 – 30.9]) and not for the 6th week (p-value = 0.684; 95% CI [-10.2 – 15.5]). On timeliness, intervention shows significant effect (p-value = 0.002, 95% CI [4.7 – 22.0]), (p-value = 0.001, 95% CI [7.4 – 23.1]) and (p-value = 0.001, 95% CI [6.4 – 18.8]) across the schedules. Furthermore, results revealed that when compared to the mothers, involving the fathers led to a statistically significant result on timeliness of immunisation (p-value= 0.014, 95% CI [0.081 - 0.729]). Lastly, intervention also significantly (p-value=0.001) reduced barriers to immunisation. This study affirms the role of mHealth in improving immunisation outcomes in Nigeria and further demonstrates the superiority of reminder SMS over SMS-delivered health education. There is a need for policymakers to design a policy that would mandate the use of a parental reminder system for improved immunisation outcomes in Nigeria

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CHAPTER 1

INTRODUCTION

1.1 Introduction to the Chapter

In this chapter, the researcher discussed the study's background, the statement of the problem, the significance of conducting the study, research questions, objectives, and hypotheses, the scope and delimitation of the study, operational definitions of terms, and a summary of the chapter.

1.2 Background Information

Infectious diseases such as measles, pertussis, hepatitis B, poliomyelitis, pneumococcal disease, meningococcal diseases, and *Haemophilus influenzae* type b are the leading causes of morbidity and death among infants, especially after the first six weeks of life, regardless of comorbidity (Cohen, 2020). According to evidence, these infectious diseases are of public health concern with adverse consequences on the world economies and increasingly threaten health security for many nations (Zhang et al., 2023; Baker et al., 2021). Immunisation has been recognised as cost effective strategy for protecting the health and wellbeing of a nation's citizens (Zhang et al., 2023; Baker et al., 2021). For example, evidence reports that for each one dollar spent on immunisation, there is 44 dollars gained into the country's economy (World Health Organisation [WHO], 2024a).

Microorganisms such as bacteria, viruses, protozoa, and parasites that transmit infectious diseases cause 5.3 million infant and child deaths globally (Bassat et al., 2023; Perin et al., 2022). Evidence reports that 99% of such deaths are happening in developing countries, mainly because of a weak health system and poor immunisation coverage (Bassat et al., 2023). Accordingly, evidence opined that vaccines effectively prevent approximately 40% of global mortality due to Vaccine Preventable Diseases [VPDs], of which about 52% of those mortalities are occurring in African countries (Shattock et al., 2024; Sinumvayo et al., 2024). The high proportion of VPDs reported in African countries is concerning and calls for concerted efforts to ensure that vaccines are available and administered to children under five to protect their health and prevent mortality (Shattock et al., 2024). VPDs are infectious diseases that can be spread from