



Title of your Paper: Health Literacy using SMS/WhatsApp at Paediatrics Specialist Clinics in Lagos: Clinicians' perspective

First Author (Oluwaseun Adeola Abiodun-Asanre)

Department: Technical services

Institution Name: Lagos State University College of Medicine, Ikeja, Nigeria.

E-mail address: oluwaseun.abiodun-asanre@lasucom.edu.ng

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Abstract:*Introduction*

Information communication is an integral part of human life. Effective communication is a crucial component in all stages of health care provision. SMS/WhatsApp messages used in paediatrics specialist clinics provide new innovative opportunities for patient follow-up and strengthen doctor-patient communication.

Objectives of the study

To ascertain the usefulness of SMS/WhatsApp messages by paediatricians as follow-up tools at paediatrics special clinics in Lagos, Nigeria; to determine if the use of SMS/WhatsApp will enhance clinician's job in controlling the outbreak of infectious diseases and to ascertain if it helps the doctor-patient communication.

Methods

A voluntary online survey was created and distributed to paediatricians in the five (5) paediatrics specialist clinics in General Hospitals in Lagos State, Nigeria, and the Paediatrics Specialist clinic in Lagos State University Teaching hospital (LASUTH) Ikeja, Nigeria. Of the 32 Paediatricians at the special clinic, 30 completed the survey.

Results: *The findings revealed that 86% of the respondents were females while only 14% were males. A total of 58.6% of respondents have between 11 to 20 years of clinical experience, and 37.9% are those with 6 to 10 years of clinical experience.*

The majority (82.6%) of the respondents run clinics weekly, and 65.5% Sometimes use SMS/WhatsApp to follow up on patients, while 78% Sometimes text to remind/cancel appointments. Meanwhile, 61% have never texted to prescribe the drug and 76.9% have never texted a laboratory result.

However, three quarter 91% Strongly agree that SMS help to monitor patient treatment, 87% Strongly agree that SMS help to control disease outbreak, and 70% Strongly Disagree that patients' information should not be discussed with others.

Conclusion: *The use of SMS/WhatsApp for continuous communication between patients and doctors in special paediatrics clinics is essential for quality health care delivery, patient-doctor relationship, and curtailing the spread of diseases.*

Keywords: *Paediatrician, SMS/WhatsApp, Health literacy, Specialist clinic, Health information communication*

Introduction

Information communication is an integral part of human life. Effective communication is a crucial component in all stages of health care provision. Paediatricians provide concise and timely information communication with patients, caregivers, and colleagues to protect patients, save cost, increase efficiency in the workflow, reduce medical errors and reduce patient relapse or readmission. Basic information relating to diagnosis, disease prevention, disease monitoring, self-management, health promotion, improving medical compliance etc., are communicated to patients daily by clinicians (Liu & Li, 2020). Good doctor-patient communication enables the patient to share essential information that will lead to accurate diagnosis, a better understanding of the patient's needs, proper therapy and consequently, reduction of symptoms. Patients are also better informed and adhere to the treatment plan when information is adequately communicated by their doctors.

In the past, doctor-patient communication is done through face-to-face interaction (only on clinic days), however, there is now a gradual transformation in the use of mobile health technology tools by clinicians in promoting health care delivery. Mobile messaging services have been at the forefront in the last decade as a follow-up tool; it enhances the doctor-patient relationship, improve patient sincerity, and speed up the recovery process. SMS/WhatsApp messaging tools are commonly used in developed and developing countries; it is mostly used in Nigeria for simple, fast, and cost-effective communication (Yahya & Yahya, 2019). Short message services (SMS) is messaging application available on all mobile phones, including cheap, low-end handsets, while WhatsApp is a messenger application for smartphones that uses the internet to send text messages. These messaging services can create and transmit information among different users, improving and promoting the delivery of health care solutions. SMS/WhatsApp is now readily adopted into the daily workflow by clinicians for information sharing with colleagues and patients (Benedictis et al., 2019). This was apparent during the COVID-19 pandemic where SMS/WhatsApp became a transparent medium for doctors to educate the patient on prevention and precaution, risk factors, curtailing the spreading of the virus, and appropriate steps in case of symptoms (Barayev et al., 2021). The potential of SMS/WhatsApp message integration as a communication channel between patients and clinicians has been acknowledged globally in the literature but not in Nigeria, especially in paediatrics specialist clinics as a follow-up tool, therapy management, and infectious disease control tool. Studies from Lippoliti and L'Engle (2017) agree that SMS/WhatsApp messages are effectively used to communicate with patients, especially in African sub-region or low-income countries. It is also a preferred channel of communication in case of emergency, or disease outbreaks and mobilises support. Okuboyejo & Eyesan (2015) concluded that SMS/WhatsApp has a clear edge in medication adherence in chronic care; it creates a multi-way interaction between patients and clinicians. Thereby, creating an essential relationship for patient follow up, safe recovery and efficient health care delivery. In a recent development, Lai et al., 2021 conducted a study on the use of short message service (SMS) to reduce outpatient attendance in ophthalmic clinics during the coronavirus pandemic. The study showed that a total of 17,028 SMS were sent out. 14.3% postponed their appointments. The primary reason for the postponement of the meeting was that most patients were concerned about contracting the COVID-19 virus. As a result, 13.9% overall reduction in clinic attendance with high patient satisfaction (96%). Thus, with the increasing pattern of mobile technology usage such as SMS/WhatsApp in the health sector as a communication tool between patient-clinician, face-to-face consultations are reduced, curtailing the spread of infectious diseases.

Therefore, the objectives of the study are to ascertain the usefulness of SMS/WhatsApp messages by paediatricians as follow up tools at paediatrics special clinics in Lagos, Nigeria;

to determine if the use of SMS/WhatsApp will enhance clinician's job in controlling the outbreak of infectious diseases; and to ascertain if it helps the doctor-patient communication.

Methodology

Settings/study site

General hospitals in Lagos State, Nigeria state government-owned specialist hospitals spread across the State. Lagos State University Teaching Hospital (LASUTH) is the only tertiary level hospital owned by Lagos State government and is attached to the medical college for the State. Paediatrics clinics are run in both the General hospitals and the teaching hospital. Specialists for a field of medicine are employed to meet the growing demand of the child health care. All government owned hospitals work hand in hand as there are referrals for standardize specialist consultation to the patient. Lagos State is located in the south-western geopolitical zone of Nigeria, and is considered the commercial capital of the country. As the nation's largest urban area, the provision of high quality health care services at all levels to dwellers is crucial.

Study design and population

A descriptive quantitative research method was adopted for this study. The population for this study includes the thirty-two paediatric specialists who work within the Lagos State General Hospital system and LASUTH.

Instrument for data collection

A google form questionnaire was created and used as the survey instrument. The survey instrument contained items on respondents' clinic location and demographic characteristics. The questionnaire assessed respondents' health literacy through SMS/WhatsApp and clinicians' perspectives. Questions were closed-ended with check boxes to choose from. Regarding health literacy using SMS/WhatsApp, respondents were asked whether SMS/WhatsApp were used to follow up on patients, text as a medication reminder, text to remind/cancel an appointment, prescribe drug./adjust medication. Whether they text for a new consultation, text laboratory result, text for management plan, and whether the text in plain language. The clinicians' perspective item includes whether SMS/WhatsApp helps patient treatment monitoring and control of disease outbreak. Whether communication with the patient should be recorded in the patient folder, shared with third parties, whether personal/ work phone is used in sending messages, and whether messages have been mistakenly sent to a wrong number.

Method of data collection

The link to the questionnaire was shared through email and WhatsApp chat explaining the objectives of the study. Potential participants filled the voluntary and anonymous questionnaire. Email/WhatsApp chat were sent three times to all the potential participants. Thirty-two (32) participants were contacted from the six general hospitals (Alimosho, Ifako, Gbagada, Festac, Messay, Isolo,) and one Teaching hospital (Ikeja); however, only thirty (30) respondents from eight specialties (Neonatal, Emergency, Gastroenterology/Nutrition, Endocrinology/Metabolic Diseases, Haematology and Oncology, Nephrology and Neurology and Respiratory and Allergy) completed the questionnaire. Statistical analysis was performed using Microsoft Excel (Microsoft Corp., Redmond, WA, USA) and SPSS software version 20 (SPSS Inc., Chicago, IL, USA) through descriptive statistics.

Result

A total of 30 responses (4 male and 26 female) were received, making 13.3 % and 86.7% respectively. More than 96% of the respondents had over 5 years of working experience as Paediatrician, with the majority (73.3%) working at the Lagos State University Teaching hospital. The demographic characteristics of study participants are presented in *Table 1*.

Table 1: Demographic characteristics of study participants

		Frequency	Percentage %
Gender: (<i>n</i> =30)	Male	4	13.3
	Female	26	86.7
Years of experience as Paediatrician: (<i>n</i> =30)	1-5	1	3.3
	6-10	12	40.0
	11-20	17	56.7
Clinic Location: (<i>n</i> =30)	Lasuth	22	73.3
	Massey	1	3.3
	Mcc Festac	1	3.3
	Alimosho	3	10.3
	Isolo	1	3.3
	Ifako	1	3.3
	Gbagada	1	3.3
Speciality : (<i>n</i> =30)	Neonatal	7	23.3
	Emergency Paediatrics	4	13.3
	Gastroenterology/Nutrition	4	13.3
	Cardiology	3	10.0
	Haematology and Oncology	1	3.3
	Nephrology and Neurology	1	3.3
	Respiratory and Allergy	2	6.7
	Endocrinology/Metabolic Diseases	4	13.3
	Pulmonology	3	10.0
	Infectious Diseases	1	3.3
Clinic days : (<i>n</i> =30)	Once a week	25	83.3
	Twice a week	5	16.7

Health literacy through SMS/WhatsApp

As shown in *Table 2*, the majority of the respondents use SMS/WhatsApp to remind/cancel an appointment with the patient (95.7%), allows the patient to reply to a text (93.3%), text in plain language (90.0%), follow up on patient (82.2%) and adjust prescribed dosage (66.7%). While majority never use SMS/WhatsApp to text medication reminder (76.6%), laboratory result (76.9%), management plan (63.3%) and for new consultation (63.3%).

Table 2. Health literacy through SMS/WhatsApp

	Never	Sometimes	Agree
Use SMS/WhatsApp to follow up on patient	3 (10.0%)	22 (65.5%)	5 (16.7%)
Text as medication reminder	23 (76.6%)	6 (20.0%)	1 (3.3%)
Text to remind/cancel an appointment	1 (3.3%)	24 (78.0%)	5 (16.7%)
Text to prescribe drugs	18 (61.0%)	12 (39.0%)	-----
Text to adjust prescribed dosage	10 (33.3%)	20 (66.7%)	-----
Text laboratory result	13 (76.9%)	7 (23.1%)	----
Text for new consultation	19 (63.3%)	11 (36.7%)	-----
Text management plan	19 (63.3%)	11 (36.7%)	----
Allow patients to reply text	2 (6.7%)	13 (43.3%)	15 (50.0%)
Text in plain language	3 (10.0%)	11 (36.7%)	16 (52.3%)

Clinician's perspective

The result from *Table 3* shows that 94.3% of clinicians agree that SMS/WhatsApp help monitor patient treatment, (90.3%) controls disease outbreak, and (93.3%) communication should be recorded in the patient folder. While about 60% of the respondents reported the use of personal phones for communication, about 83.4% agree to the use of work phones. However, 80.0% disagree with discussing patient information with others.

Table 3. Clinician's perspective

	Disagree	Strongly Disagree	Agree	Strongly Agree
SMS/WhatsApp help monitor patient treatment	1 (3.3%)	1 (3.3%)	27 (91.0%)	1 (3.3%)
SMS/WhatsApp helps control disease outbreak	2 (6.7%)	1 (3.3%)	26 (87.0%)	1 (3.3%)
Mistakenly send message to a wrong number	1 (3.3%)	1 (3.3%)	----	---
SMS/WhatsApp communication should be recorded in the patient folder	----	2 (6.7%)	15 (50.0%)	13 (43.3%)
Use work phone to send message	2 (6.7%)	3 (10.0%)	17 (56.7%)	8 (26.7%)
Use personal phone to send message	3 (10.0%)	9 (30.0%)	15 (50.0%)	3 (10.0%)
Discuss patient information with others	3 (10.0%)	21 (70.0%)	3 (10.0%)	----

Discussion

WhatsApp usage in Nigeria as of the third quarter of 2020 rated 93% of internet users (Varrella, 2021), which account for its usability in all sectors, including the health sector. Similarly, SMS is frequently used in transmitting data on any mobile phone (with or without the internet) and is readily available in remote places, leverage that the message sent will reach the endpoint (Eleanya, 2021). Base on this, SMS/WhatsApp messaging tool was used among other text messaging tools for this study. A number of merit of SMS/WhatsApp messages were highlighted by Guretal, 2017, its cost efficient and convenient for patients, serve as a backup for clinicians in providing targeted intervention to improve adherence to treatment and recommended therapies outcome.

As a specialist in child health care and advocacy, Paediatricians, with years of experience spanning over five years, understand effective and efficient dissemination of information in the workflow. From the first consultation, doctor-patient communication is established and continue through the clinical process to recovery. However, information shared is not only for the patient who is mostly under aged but also for the parent or caregiver who is saddled with the responsibility of adherence to the clinicians' prescription for improved treatment/therapy.

This study identified clinicians' perspectives on using SMS/WhatsApp as a communication tool for patient follow-up, monitoring treatment, and controlling diseases. SMS/WhatsApp reminders have been linked to improved clinic attendance, reduced the number of shows and helped clinicians to plan (Watkins et al., 2018) adequately. Where 94.4% of clinicians reported using SMS/WhatsApp messages as a reminder for appointment adherence, this is in line with a study that shows the utility of text messaging as a reminder for different patients (Lin et al., 2016). Due to personal pressure, parents and caregivers usually fail to keep the date for the next appointment. Effective follow-up process enables properly plan not to miss an appointment, to reschedule an appointment without creating additional work load for clinicians'. Although this study didn't consider the number of reminders sent or the kind of messages sent, clinicians usually asked closed-end questions, which led to yes or no answers from the patient, not considering the clinical issues of missed or rescheduled appointments. Two findings are of note - follow up on patient from doctor and patient are allowed to text back. This gives a feeling of care and personal connection between patient and clinician. This

feeling indirectly improves patient health and promotes medical level. The doctor could be better informed about related diseases, like complications, survival period, and recurrence rate ((Kee et al., 2018, Liu & Li, 2020). Research reports disclosed that text messaging saves 50% of the time from diagnosis to delivery of HIV DNA tests in rural Zambia (Sutcliffe et al., 2017). Patients and parents can be contacted for treatment or to adjust prescriptions within a short period. Globally, the COVID-19 pandemic created a shift towards mobile consultation. SMS/WhatsApp became a transparent medium for doctors to educate the patient on prevention and precaution, risk factors, curtail spreading of the virus, and appropriate steps in case of symptoms (Barayev et al., 2021).

A significant effect is the text language, which could positively or negatively affect the doctor-patient relationship. Texting in plain language could mean a common language well understood by both clinician and patient. An official language is more like it, gives a better understanding to the Language barrier between patient and clinician at a cost on both patients satisfaction and health outcome (Aelbrecht, 2019)

The coronavirus pandemic (COVID-19) has caused a significant shift towards the use of mobile technology for patient-doctor communication across the globe (Barayev et al., 2021). Social distancing measure has been a tool for lowering the risk of patients and clinicians' contacting the virus; consultations with specialists using SMS/WhatsApp has become more essential than ever.

Limitation

This study has a number of limitations; firstly, the Paediatrics specialist clinic was studied, which is only an arm in medicine. Secondly, the evaluation of the message context and the individuals involved in sending the text messages cannot be ascertained.

Lastly, this study was conducted only in Lagos state, Nigeria and many paediatricians from other states in Nigeria are not represented in this study. However, paediatrics clinics faced similar challenges to those in other States, and the researcher hopes that the advantages and disadvantages of using SMS/WhatsApp may also be identical.

Conclusion

The use of SMS/WhatsApp for continuous communication between patients and doctors in special paediatrics clinics is essential for quality health care delivery. It creates a feeling of care and personal connection between patient and clinician. This feeling indirectly improves patient health and promotes medical level Also, It promotes effective doctor-patient communication, strengthens the patient-doctor relationship, improves patient follow-up process, improves clinic attendance, and curtails the spread of diseases.

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