ORIGINAL RESEARCH

Mobile Instant Messaging (MIM) to support teaching practice: Insights from a nurse tutor program in Nigeria

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Abstract

Aim
To determine the feasibility of using the Mobile Instant Messaging (MIM) platform, WhatsApp, to provide supervision and support for student nurse tutors during a teaching practice placement in Nigeria.

Methods
A descriptive qualitative method was used to design and evaluate a six-week WhatsApp group discussion intervention among 19 student nurse tutors. Two pre-intervention focus group sessions (n=9 and n=10) and a workshop were conducted to assess the students' content needs and media usage, and to develop a short online supervisory curriculum. To evaluate the intervention, two focus group sessions (n=9 and n=9) were carried out, transcribed verbatim, and analysed together with the actual WhatsApp conversations using thematic content analysis.

Findings
The participants found the WhatsApp-enabled learning space valuable, in particular for the transfer and application of knowledge in their day-to-day teaching practice and, more generally, for their professional development. There were rich and multifaceted indicators of learning and professional development in evidence which were mostly triggered by specific facilitation techniques. The four themes from the WhatsApp conversations are: (1) sharing and discussing "tricks of the trade"; (2) providing direction and triggering reflective (teaching) practice; (3) sparking professional discussions and announcing professional development opportunities; and (4) maintaining a continuous moderating and teaching "presence".

Conclusion
Despite some technical challenges centred mainly on the accessibility of the MIM space, the study identified indicators of good supervision practice and the results point to the feasibility and value of MIM to enhance supervision during teaching practice.

Introduction

Teaching practice is a placement in which students learn how to teach by being exposed to a real classroom setting[1]. It is an essential and highly valued component of many teacher education programs[1]. The underlying assumption of teaching practice is that teaching is best learned by observing practitioners and by providing opportunities for students to teach in a real setting[1]. Accordingly, programmes are typically designed in a way which provides student-teachers with diverse opportunities to put theories, which relate to the principles of education, into (teaching) practice[2].

The development of teaching skills is, however, neither a straight forward nor an automatic development[3]. To support students in this process, they are guided by more experienced and qualified teachers in the local schools and by supervisors from the originating schools in a systematic manner[1]. Supervision is thus conceived to be a key component in teaching practice. It manifests in the form of appointed supervisors who pay scheduled visits to the student-teachers and inspect, assess and provide direct feedback on different components of the teaching practice program. These aspects include the development of lesson plans, teaching, class control and evaluation as part of efforts to ensure the professional development of the student[1,2]. However, a number of shortcomings are associated with the supervision of teaching practice including insufficient time for supervision, supervisors' difficulty to empathize with students' concerns, inability to enable students in making the theory-practice connections and conflicts between assessment-oriented and supportive roles of supervisors[1].

Against this backdrop, the capacity of Mobile Instant Messaging (MIM) to provide nursing students with support in informal learning settings, such as outside posting[4] might be leveraged more systematically. More precisely, WhatsApp could be used as an additional supervisory platform to overcome some of the challenges indicated by providing a more continuous supervision process. The educational potential of MIM was confirmed by a systematic review, which pointed to a number of social, technological and pedagogical affordances[5]. These affordances could make it a suitable platform also for the delivery of educational interventions in teaching practice in the contexts under investigation for a couple of reasons. Firstly, mobile phones that enable the application of MIM are now readily available and are increasingly being used to deliver interventions such as use of mobile phones for follow-up care for acutely sick children[6], and short text messages (SMS) to promote reproductive health among young persons[7]. Moreover, they are being used and researched in many resource-limited settings[8]. Secondly, the fact that these devices and platforms allow communication across large geographical distances makes them appropriate for situations in which supervisors and students have only restricted opportunities to meet face-to-face. The burgeoning use of MIM is perhaps most clearly reflected in WhatsApp user statistics. With more than one billion daily users, WhatsApp is the most popular MIM tool[9] which is increasingly being used for communication within and across personal and professional spheres. The group chats allow up to 256 users to connect within a closed group, where they can share text and multimedia messages with each other. The platform is also compatible with different cellular network providers and devices; and, importantly, it is relatively inexpensive. Henry and colleagues[10] characterise WhatsApp as a 'platform that provides users with affordable ways to send and receive text messages, photos, videos and other media at the one-to-one, one-to-many, many-to-one and many-to-many levels'.

However, despite its proliferation and its educational qualities, MIM is still one of the least researched forms of mobile learning. The potential of use of WhatsApp to connect, educate and supervise health workers in low resource settings is reflected by an increasing number of publications from a range of Sub-Saharan African countries[8,10,11,12]. For example, WhatsApp was used for educational support provided to student nurses during primary health care postings in South Africa and the platform was found to help learners to put theory into practice[11]. In a more informal learning context, Henry and colleagues[10] reported that WhatsApp was used to enhance supervision of community health workers in two rural districts in Kenya. The majority of the messages corresponded with at least one of the supervisory objectives of creating a social environment, sharing communication and information, or promoting quality services[10]. In Malawi, WhatsApp was used by community health workers and their supervisors, which resulted in higher levels of connectedness among a professionally isolated health workforce[8].

There is widespread use of WhatsApp in Nigeria but its educational and supervisory potential in nursing education and practice has not been systematically assessed. There is, however, evidence of the resourceful use of other forms of social media for professional and educational purposes, such as Facebook. This social network was used, for example, for the provision of peer-to-peer learning and knowledge sharing among medical laboratory scientists and was found to be a source for learning and professional development[12]. Short Message Service (SMS) has also been used to deliver reminders to mothers to take their children to facilities to receive immunisation[13], to improve uptake of antenatal care attendance, intermittent preventive treatment of malaria in pregnancy and Tetanus Toxoids among pregnant women[14] and to deliver reproductive health messages to female secondary school students[15]. Very little, however, is known about the use of MIM in the context of teacher education and teaching practice. The goal of the research reported in this article was to determine the feasibility of using WhatsApp to provide supervision and support to students nurse tutors during their six-week teaching practice posting. The specific objectives of the study were to determine the students' media usage pattern, systematically use WhatsApp group chat for the supervision of the students during the teaching practice and evaluate this intervention.

Methods

The Setting

The study was conducted from March to June 2017, with 19 students who attended the two-year post basic training as nurse tutors at the University College Hospital, Ibadan, Nigeria. In this programme, cohorts of students are usually placed for 6 weeks in Schools of Nursing in different locations in the country, where they are expected to demonstrate and strengthen competencies for formal teaching. Supervisors pay scheduled visits to assess skills and support the student teachers in developing lesson plans, management of class and lecture presentations. Successful completion of the teaching practice is a requirement for the award of a diploma as a nurse tutor recognized by the Nursing & Midwifery Council of Nigeria.

Ethical Considerations

The University of Ibadan/University College Hospital Ethics Review Committee approved the protocol of the study. Students were informed that the data collected would be used for research purposes, that the information collected would be kept confidential and that their participation was voluntary. They were also assured that there would be no potential repercussions should they choose not to take part in the study. Written informed consent was obtained from the students before their enrolment in the study and each of the participants kept a copy of their signed informed consent form for their record.

Study population, sample size and inclusion criteria

The study population were students undergoing teaching practice as part of their post basic training program as nurse tutors. The two inclusion criteria set for enrolment into the study were that the student owned a smart phone and was willing to participate in it. The total numbers of students enrolled for the program in 2017 was 19 and they all consented to participate in the study and were therefore enrolled. The participants were recruited shortly before the commencement of the teaching practice. The study was implemented in three phases: preparatory, intervention and evaluation. Details of the activities implemented in each of these phases are provided below.

Preparatory phase: Assessment of needs and media usage

The main purpose of the preparatory phase was to gain insights on how to design an intervention that leverages digital media as a means to supervise and support students during their teaching practice placements. To do so, two focus group discussions were carried out (n=9 and n=10 students, respectively). Both lasted about an hour and, upon the participants' consent, they were recorded on audio tape. The guide, which was prepared beforehand, consisted of questions about the availability and ownership of smartphones, usage patterns of social media and training needs with regard to the teaching practice. Both aspects were explored with the intention to develop an educational/supervisory intervention to better support students during the placement. The findings indicate that nearly every student (n = 18/19) owned a smartphone. The only student who did not own a smartphone, nevertheless, agreed to enrol with the understanding that he would read posts on the group chat by reading these from the telephone of a colleague. The social media applications which were most well-known

to the students were Facebook, IMO and WhatsApp. Of these, WhatsApp was the most popular tool, which was used primarily for social and private communication. The main reason for the popularity of WhatsApp was its perceived affordability. The students reported that they already had an existing WhatsApp group, which they used mainly to share social and practical information including birthdays, job opportunities, course timetables and assignments. The students indicated that only one of their teachers had ever used WhatsApp for direct education activities, i.e., for the submission of an assignment. Drawing on this information, the idea of using a WhatsApp group for the intervention emerged. Regarding the topics that they would like to have addressed in the WhatsApp discussions, the students emphasised instructions on the development of a lesson plan, practical information and do's and don'ts of effective classroom teaching. Apart from concrete discussion topics, students suggested the setting of ground rules for the participation in the digital space, especially regarding its professional scope. Finally, the students expressed uncertainty and concerns of not knowing what to expect during the period of teaching practice since many had never been to the towns and cities where they were to undertake this posting. These concerns further underpinned the potential value of the use of WhatsApp to offer opportunities for students in new and unfamiliar environments to stay connected not only with peers but also with their supervisor. The supervisor was chosen as the moderator of the WhatsApp group. The FGD were followed by the development of a template (in the form of a short curriculum) for the moderation. This was developed during a one-day workshop attended by five members of the research team and two of the teachers responsible for coordinating the teaching practice programme from the participating school. Every week was dedicated to one of the following topics: introduction/rules for participation, ethics of teaching/preparation for teaching practice, lesson plan, instructional materials, classroom management, evaluation and reflections. The procedures and rules of use of WhatsApp platform for educational purpose were also discussed at the workshop.

The Intervention

The research team created a WhatsApp group and enrolled all the 19 students as members. The students suggested naming the group 'Vibrant' in expectation of a lively discussion. A member of the research team provided technical assistance for two students who needed help in setting up and using WhatsApp. Otherwise, no technical issues were noted. Using the curriculum as a guide, the moderator posted new contents at the beginning of each of the six weeks (May 15 - June 27, 2017) during the period of the teaching practice and encouraged all members of the group to contribute to the message posted. In essence, the WhatsApp group chat was intended to serve as a forum for students to share their teaching practice experience, create opportunities to ask questions to and receive advice and supervision from the moderator.

Evaluation of participation in WhatsApp group chat

After the completion of the teaching practice, 2 FGD sessions (n=9 and n=9) were conducted with the students to identify perceived benefits and challenges, lessons learned and concrete recommendations for future improvements. The group discussions were transcribed verbatim. To

understand the nature of conversations, the WhatsApp discussions were downloaded. The WhatsApp discussion also included questions in which students were asked at the end of the intervention to describe and reflect on their experience directly in the group chat.

Data management and analysis

The study drew on two main data sources: the information gathered in the focus groups (to understand the participants' perception on the use of WhatsApp), and the written conversations in the WhatsApp group (to understand the very nature and the dynamics of the learning and supervisory interactions). The group discussions were transcribed verbatim. To understand the nature of conversations, the WhatsApp discussions were downloaded. Both the WhatsApp group conversations and the FGD transcripts were entered into the ATLAS Ti software (version 7.5) and analysed using thematic method. The coding was based on an inductive content analysis approach, i.e., individual (similar) text segments were summarised to broader themes which emerged through the iterative analysis of the text. The content of the WhatsApp group conversations was also subjected to quantitative data analysis using frequency counts to determine the number of posts from each of the participant and the moderator.

Findings

Nature and form of the WhatsApp interactions during teaching practice

A total of 1530 posts were made in the WhatsApp group. A summary of the posts per week is shown in Table 1. The moderator's engagement was high with her contributions accounting for 42% of the total posts. The highest number of posts (500) occurred during the first week of the teaching practice. This initial peak was followed by a number of weekly postings that ranged from 167 to 264. There was considerable variation regarding the number of posts contributed by the students. Two students did not make any contribution while the contributions from the active participants ranged from n = 5 to 238. Thirty-four posts (2% of the total) contained photos, videos and other images and about a quarter of these images were posted by the moderator.

Summary of Weekly Posts of WhatsApp Group Chat

Week	Number of posts					
	Moderator		Participants		Total	
	n	%	n	%	n	%
One (May 15-22, 2017)	182	36.4	318	63.6	500	32.7
Two (May 23-29, 2017)	72	43.1	95	56.9	167	10.9
Three (May 30 - June 6, 2017)	86	42.2	118	57.8	204	13.3
Four (June 7-13, 2017)	115	43.6	149	56.4	264	17.3
Five (June 14-20, 2017)	97	47.5	107	52.5	204	13.3
Six (June 21-27, 2017)	97	50.5	95	49.5	191	12.5
Total	648	42.4	882	57.6	1,530	100.0

The most dominant educational topic discussed was on the development of the lesson plan (41.2%) (Table 2). This was followed by discussions on instructional materials (19.6%),

Summary of Posting from WhatsApp discussions

S/N	Contents of post	Frequency of postings		
		Moderator	Students	Total
		n (%)	n (%)	n (%)
1	Lesson plan	34 (41.5)	48 (58.5)	82 (41.2)
2	Instructional materials	26 (66.7)	13 (33.3)	39 (19.6)
3	Evaluation/ Evaluate	29 (80.6)	7 (19.4)	36 (18.1)
4	Ethics (Teaching Ethics, Ethos etc.)	6 (46.2)	7 (53.8)	13 (6.5)
5	Instructional objectives	4 (44.4)	5 (55.6)	9 (4.5)
6	Classroom management	4 (44.4)	5 (55.6)	9 (4.5)
7	Entry behaviour	3 (37.5)	5 (62.5)	8 (4.0)
8	Career/Job opportunities/ recruitment	3 (100.0)	0 (0.0)	3 (1.5)
	TOTAL	**109 (54.8)**	**90 (45.2)**	**199 (100.0)**

evaluation of students (18.1%) and the ethics of teaching (6.5%) (Table 2). In addition to the educational contents, four themes emerged from the analysis of the transcripts. These themes are (1) sharing and discussing tricks of the trade, (2) providing orientation about teaching practice, (3) professional discussions and (4) providing continuous teaching.

1. Sharing and discussing "tricks of the trade"

The moderator provided practical information and "tricks of the trade" on topics with which the respondents were confronted in their daily teaching practice. The moderator did not simply post the information, but used inter alia, discussion and quiz mechanisms that triggered the participants' engagement. An example of the questions was *"How do you state your instructional objectives?"* The moderator offered the correct response only after all participants' answered the question. Concluding each weekly discussion with a quiz, which was labelled "fastest finger", further enhanced the students' attention. The quickest contributor was, given that he or she provided also the correct answer, rewarded with a small airtime. These exercises sparked numerous contributions and were met with high levels of excitement, which was expressed in the post-hoc focus group discussions and directly in the WhatsApp group, as the following example shows:

hurray!!!! Thanks to nurses connect. This is highly motivational. Airtime successfully loaded.

Another measure, which was found to trigger the participants' engagement with practical situations, was the use of mini scenarios. The learners were prompted to describe a way in which they would react to a more difficult professional situation or a dilemma, as shown in the example below:

Moderator: *I welcome your contributions on this scenario. While teaching, you observed a student is browsing the Facebook page. How would you handle this situation?*

Student: *Call the students attention and explain to him or her that browsing while the lecture is on is not allowed, that it can be done after lecture, then give a warning to all the students that anybody caught browsing will have his phone seized. …*

2. Providing direction and triggering reflective (teaching) practice

The moderator oriented the students during the teaching practice by providing an overview of the placement process and by offering organisational information. In addition, the moderator also set the ground rules for and key principles of participation in the WhatsApp group. For example, she emphasised the professional nature of the digital space and invited everyone to participate and ask questions. In very rare occasions, she reminded students' who did not adhere to some of the guidelines. Apart from reacting to prompts from the moderator, students also initiated the discussions and benefited from the moderator's responses to questions pertaining to organisational issues of their teaching practice.

In addition to providing orientation and information on placement practicalities, the moderator requested students to share status updates, teaching experiences and progress. Reflective practice or, more concretely, reflection on action[16] is a central process of students' learning and professional development. This was realised in the form of questions about the students' immersion in their new professional context and their self-perceived level of preparedness *"How are you settling down in your new environment? […]. How prepared are you for the teaching practice?".*

The moderator also asked students about concrete experiences in their teaching practice, such as: *"Let us share our class room experiences so far in the course".* In so doing, she triggered and enhanced the students' learning, especially because students were required to reflect on aspects, which worked well, and on issues that caused them worries. In addition, they often came up with potential strategies about how to overcome some of these problems.

3. Professional discussions and announcing professional development opportunities

Apart from topics which related directly to concrete experiences of the teaching placement, the moderator also stimulated wider professional discussions at the intersection between nursing and teaching. For example, the question *'Can we all identify the ethics of teaching?'* generated lively discussions of students as shown below. Students did not only respond to these prompts but they also came up with own questions they posted to the group, as the following example shows:

Student: *Is it fair that teachers are held to a higher standard of conduct than other professions?*

The moderator also triggered more general professional discussions around the profession of nursing by highlighting the celebration of specific events and announcing job opportunities, as illustrated by these quotes:

Moderator: *'Happy Nurses week to you all'.*

Moderator: *'A big & congratulations to another Prof in nursing'.*

Student: *'Thank God that's another kudos to our great profession. Congratulations to him'.*

4. Maintaining a continuous teaching and social "presence"

The content analysis revealed the constant presence of the moderator in the digital space, which manifested in short reaction times and in expressing acknowledgement of the students' individual contributions. The encouraging nature of this immediate reaction is revealed in the following analysis: The moderator acknowledged the students' contributions by saying *thank you (n = 10); well-done (n = 8); appreciate (n=6);*

thumps up (n=156) and fist bump (n=244).

The moderator also countered the otherwise ephemeral nature of MIM discussions[8] by keeping track of the students' individual contributions and reminding them (repeatedly) to respond to questions they had not yet addressed:

Moderator: 'I have not gotten yr contributions on Lesson plan'.

Student 1, student 2, student 3 etc.

Expecting yr contributions, nurses connect

The teaching presence was complemented by the development and maintenance of a social presence which was construed as a joint product of the moderator's and the students' contributions. The sociality went beyond the moderators' initial ice-breaking activities such as "To be sure we have u with us show a smiling face icon." and also included communicative sequences that initiated or concluded daily or weekly discussion episodes, such as wishing others "a good morning" or a "Hpy weekend". This form of social presence was actively maintained by both moderator and students. Although it is clearly lacking strong intellectual and/or educational qualities, its social nature is conceived to be relevant as it can pave the way for a more "productive" use of MIM[17].

The ongoing teaching and social presence was deemed to expand the students' educational terrain across the geographical and temporal boundaries of their respective schools, as the following excerpt aptly illustrates:

Student (FGD): 'we didn't feel as if we have left the school, it was as if we were still very much in school'.

The continuous moderation presence was welcomed and well received by the students, as the following quote from the focus group discussion exemplifies: is [the moderator ever] on leave? because [she] is always online and always ready to provide answer to the questions'. However, the moderator's presence also created high expectations and demands on the parts of the students, who, for example, reminded the moderator if she did not respond to their messages. (moderator), you didn't respond to my greetings)

Benefits and constraints

WhatsApp group participants generally agreed that involvement in the group chat was positive. Students referred in particular to the ways in which they experienced professional advancement and development, i.e., how they progressed from novice to professional teachers during the placement in general and through the support received in the WhatsApp group in particular.

Student: 'before [I taught like] like an ordinary teacher, but now I am really performing like a professiona" teacher.

Student: "I am overwhelmed, I v seen a lot of changes in me. Thank you once again, thank u nurses connect' […]

Similar sentiments were expressed in the focus groups. Students described educational benefits as the development of new skills that they obtained from participating in the WhatsApp group, as the quote from one student exemplifies.

"What I remember from the platform is how to create [learning] objective[s], ... it really helped me'.

Participants indicated that they did not only benefit from the pre-defined contents shared in the group, but they also learned by consulting others in case of problems and breakdowns they experienced. This was achieved by receiving direct feedback from the moderator and also from peers, as

the following quote shows:

Student (FGD): 'Most times when writing our lesson plans we can get choked up in the middle or confused on how to state our objectives when we start asking individually different suggestions will be given but you throw that kind of question to nurses connect (group chat) a specific answer is given which clears the doubt.

Many participants stated that participation in the WhatsApp group enhanced the repetition and retention of knowledge and helped them to apply knowledge directly in their teaching practice. Students explained this for instance regarding the development of the lessons plan. "the contents of the moderation made preparations of the lesson plan easy at every stage". What can be noticed again in the next statement is that the perceived benefits were also tied to peer dynamics.

Student (FGD): 'Like once or twice I remember the advantages of lesson plan, what is lesson plan, what are the advantages, what are the benefits but somehow I forgot, but from the contributions of class members I could remember'.

Another way, which helped students to apply knowledge were the mini scenarios because they showed them concrete ways of how to react to a more difficult situation in the classroom. The following statement, which was made by a student in the FGD, also exemplifies how students were able to put the digital lessons from the scenario directly into their teaching practice:

Student (FGD): 'An important issue was raised on the platform [regarding how to react to students using their phone] and it helped me in my class work. … one day … a student was actually busy on his phone, so I now called the student I said he should bring the phone so he now brought the phone, I kept the phone on my table and I now asked him question what I said immediately but the student was not able to answer so I now asked him to go back to his seat but he should not sit he should stand up'.

However, the FGD participants also identified challenges, which included insufficient airtime, power outage which made it difficult to recharge the phones, and poor network connectivity that affected the quality of reception. In the midst of the discussion, one student bemoaned the restricted opportunities to participate in the WhatsApp group by stating "No light here, no network".

Other challenges related to the tensions that resulted from the intrusion of the digital communication into daily practices, such as the distraction of spending prolonged time online, as one participant stated in the WhatsApp group.

Student : "Educative, but wen it's too much [its] lead[s] to partial distraction"

In addition, a few participants also felt that, despite the ongoing teaching presence, the moderator did not carry everyone along. The three suggestions offered for improvement are: the provision of airtime for participants, the introduction of jokes to live-up discussions and the request to have more than one moderator to lessen the burden on one person.

Discussion

The World Health Organization and other international bodies have started to emphasise the potential of mobile technology to support and connect health workers, especially in rural areas[18,19]. The implementation of this study was part of the efforts to respond to and research this dynamic. Data from the preparatory phase of the study indicate widespread ownership and use of smartphones by the students. This is

indicative of the increase in use of smartphones in Nigeria where an estimated 15 million persons owned smartphones in 2016 with primary reason for increase in adoption of these devices being lowering costs[20].

Data from the WhatsApp chat and post FGD evaluation confirm the value of WhatsApp to provide systematic and supportive supervision to students, respond to their needs, and, in so doing, aid their learning in contexts marked by geographical distances and resource constraints[8,10]. Similar results have been reported by Willemse[11] who point to the value of WhatsApp in supporting nurses in the transfer and application of knowledge in their practice settings.

The contributing factors to the success of the present intervention were the fact that students were already familiar with the use of the digital platform, and in the use of content that directly related to the needs of the students. This is also expressed by the observation that the moderator's contributions accounted for nearly half of the conversations. What follows is most of the discussions occurred between students and the moderator. This is a pattern that has been also found in other WhatsApp and MIM studies in similar settings[8]. The relevance of the continuous presence maintained by the moderator also signifies that, if students are to be supported via MIM during placements, professional and time-intensive moderation and support is required. To lessen the burden on one moderator, future research may investigate the extent to which some part of the discussions can be led by peer moderators and explore the ways in which peer dynamics could be further encouraged to provide students with more opportunities to learn from one another, which they valued already in the present study.

Overall, most students participated actively in discussion and contributed written messages. This can be viewed as particularly important because recent research found that educational and socio-professional benefits materialised mainly in participants who engaged actively in MIM spaces, i.e. who contributed with own messages to the group. However, the moderator's efforts were met with considerable variability in the number of students' written contributions, with two students who did not contribute at all. Their inactivity could be a result of poor typing abilities, or of funds to remain online for extended periods of time, or, simply, a lack of interest. The phenomenon of stark differences regarding the intensity of contributions is common in the literature on digital education and has been also observed in MIM studies[5,8]. Although Nielsen[21] has reported that participation inequality is inevitable in social media and other online communities, designers of MIM interventions need to develop innovative strategies and mechanisms to ensure that all students contribute (more equally) to the discussions.

Study Limitations

The findings of this study and their generalisation need to be treated with caution. Although the triangulation of methods can certainly be viewed as a strength[22], several limitations need to be taken into account and be possibly addressed by future research. Firstly, the sample size was relatively small. In addition, while the feasibility of the intervention has been demonstrated through the qualitative investigation, the educational impact of the use of this platform warrants future research. The content analysis and the self-reported findings point to the educational value of using this platform for supervision, but actual gains in the learners' knowledge and competences have not been demonstrated through

this research design. Yet, the findings generated by this work present an addition to the growing body of research on the value and constraints of WhatsApp and other MIM platforms to enhance education in general[4] and the supervision and professional development of health workers in African countries in particular[8,10,11,12].

Conclusions

Findings from this study indicate that it is feasible to use WhatsApp as a platform to provide supervision and learning in situations in which there are limited opportunities for face-to-face interactions between teachers and students in outside placements, such as teaching practice. Despite some technical challenges centred mainly on accessibility of the MIM space, the study identified evidence of good supervision practice and rich and, in the same way, multifaceted indicators for learning and professional development.

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