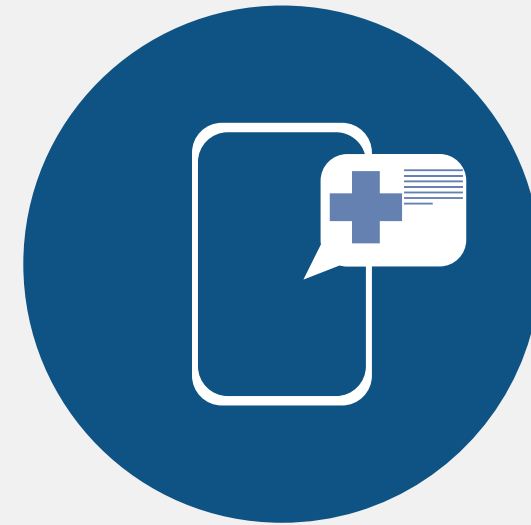
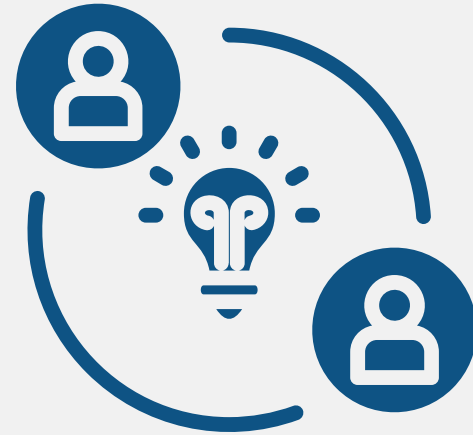
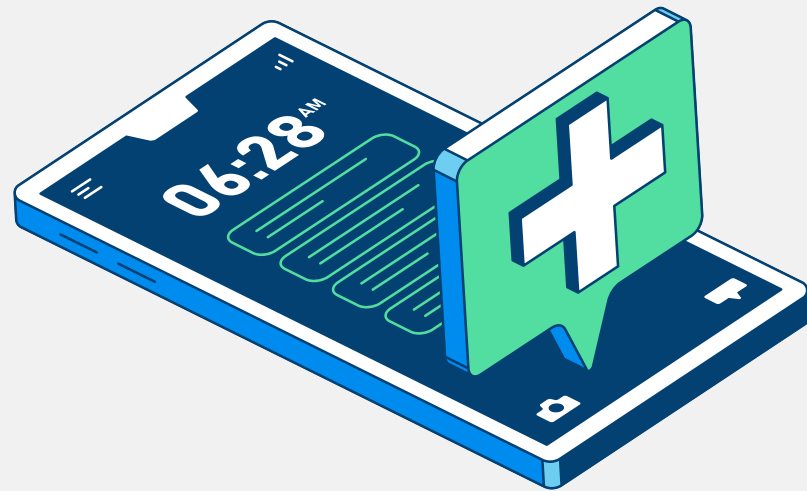


Healthcare workers' and managers' uses of mobile phone messaging applications (apps) in their daily work in South Africa: a mixed method study



Tanya Doherty¹ , Janan Dietrich^{2,3,4}, Mamakiri Mulaudzi⁴, Tondani Mudau^{2,4}, Lerato Tsotetsi^{2,3}, Simon Lewin^{1,5}

1. Health Systems Research Unit, South African Medical Research (SAMRC), Bellville, South Africa.

2. African Social Sciences Unit of Research and Evaluation (ASSURE), Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa.

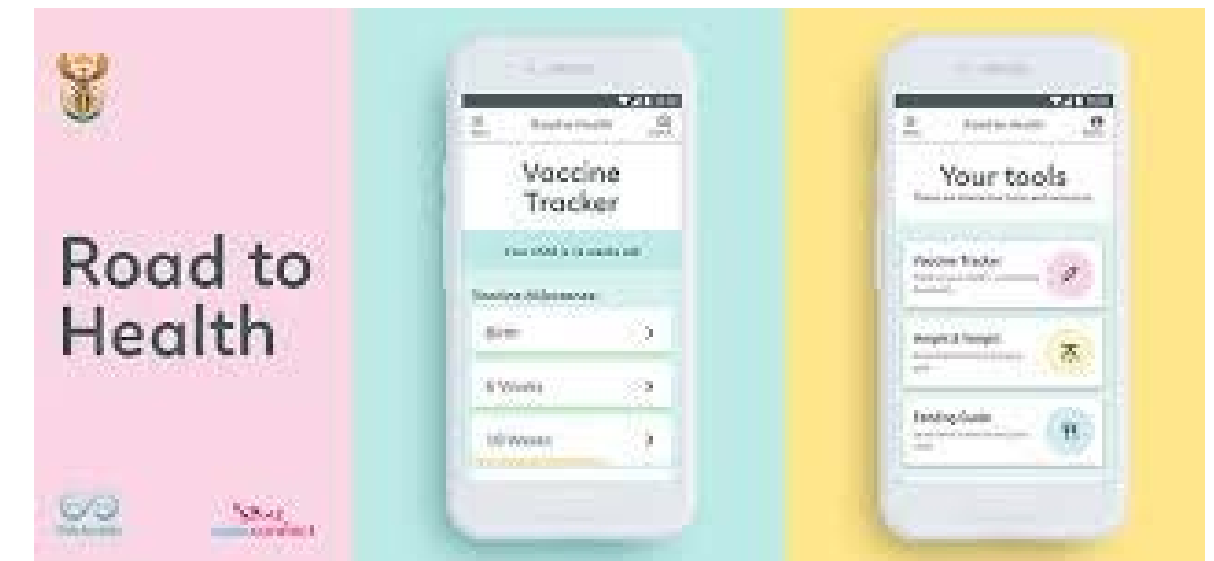
3. Perinatal HIV Research Unit (PHRU), Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa.

4. School of Human and Community Development, Department of Psychology, University of the Witwatersrand, Johannesburg, South Africa

5. Department of Health Sciences Ålesund, Faculty of Medicine and Health Sciences, Norwegian University of Science and Technology (NTNU), Norway.

Background

- Mobile health (mHealth) interventions are rapidly becoming significant tools for enhancing health service delivery and workforce performance
- In South Africa the Department of Health has initiated major mobile health (mHealth) interventions to provide information to patients and healthcare workers
- Alongside approved digital tools, healthcare workers also use their personal mobile phones informally to support daily work requirements and communicate with each other
- There is limited information on how healthcare workers use their personal mobile phones, including messaging apps, in their daily work



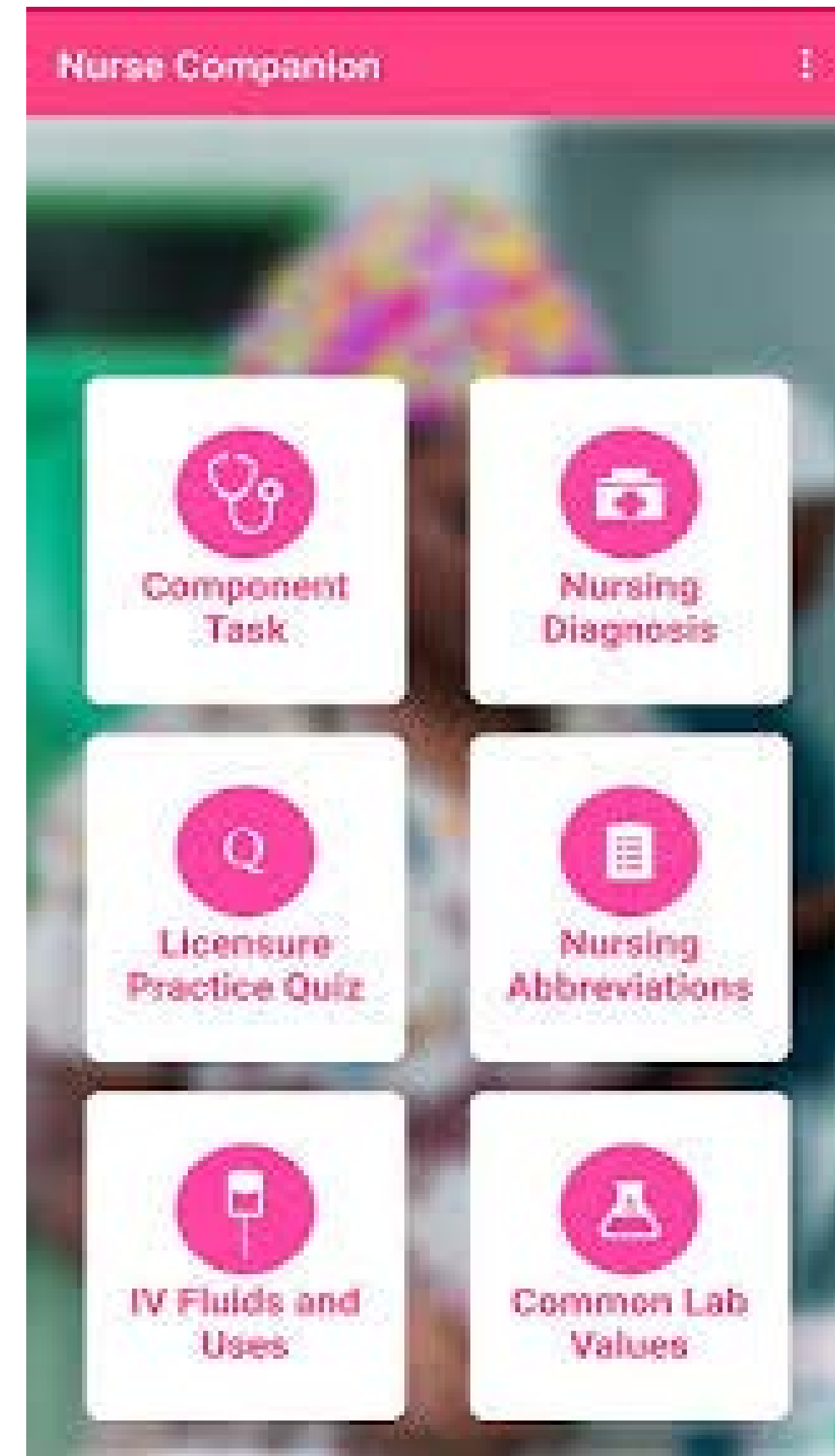
Informal use of mobile messaging apps

- Free-to-download internet-based mobile phone messaging apps include platforms such as WhatsApp and Signal
- These can be used for both one-to-one messaging of other healthcare workers, patients or managers or can be used to set up groups of healthcare workers or patients
- By informal use of these apps, we mean (Glenton 2024):
 - Healthcare workers' use of apps to support their work
 - Using approaches that are initiated by the healthcare workers themselves, and
 - That are not initially standardised, regulated, or endorsed by the health system or organisation in which they work
- Healthcare workers are often using their own phones and airtime



Study Aim

The aim of this study was to obtain a better understanding of the extent and purposes for which health workers in South Africa are using messaging apps informally and their perspectives of the benefits and challenges



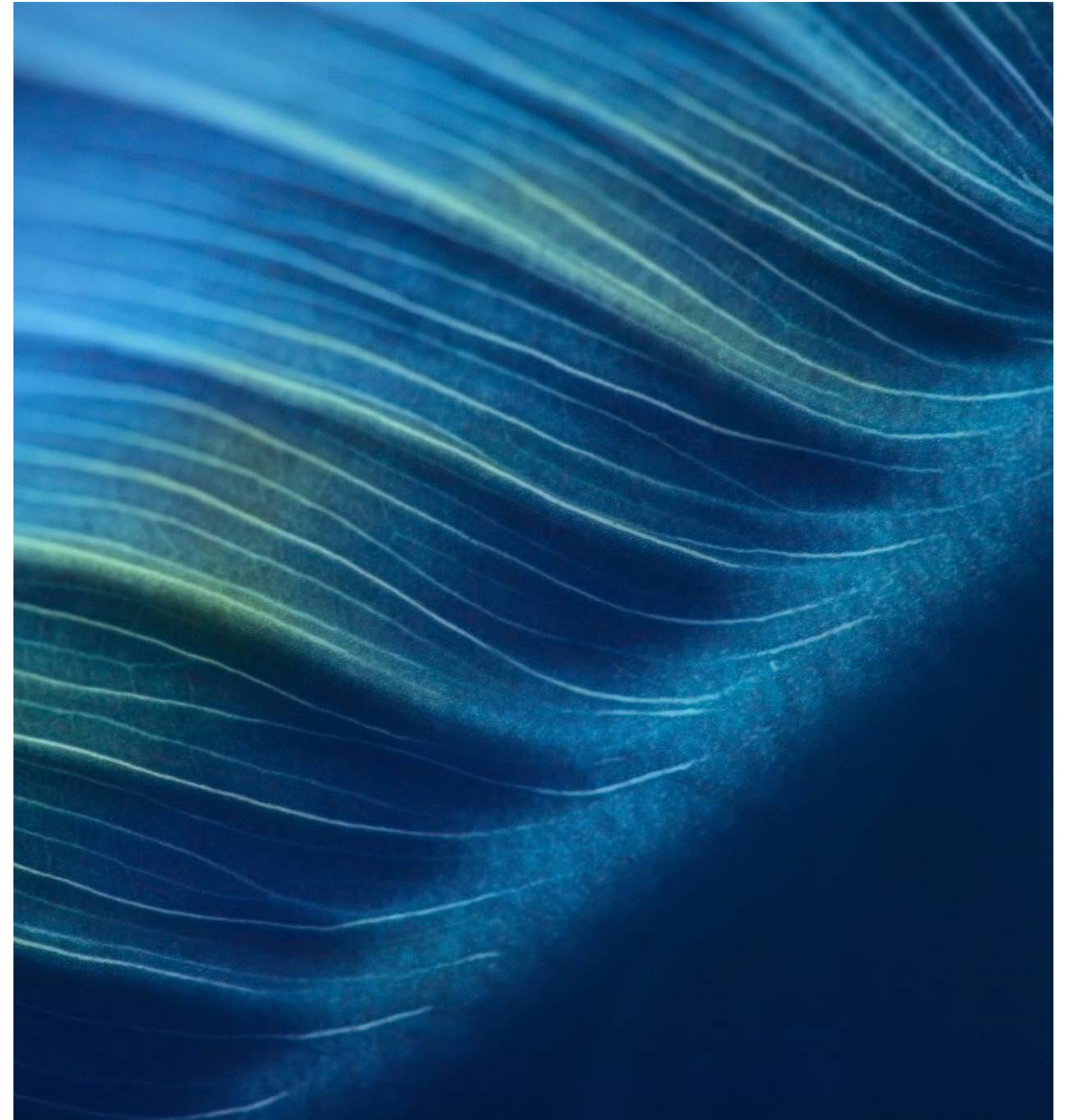
Mixed method study design

Cross-sectional anonymous online survey

Semi-structured interviews with health professionals in primary care clinics

Non-participant observation of mobile phone use in primary care clinics

Non-participant observation of WhatsApp groups



Quantitative Study Methods - Survey

Procedures

- We developed the survey questions based on a rapid scoping review and discussion within the team
- The questions were piloted and refined
- Following ethical approval, the link to the online survey was shared with the Health and Welfare Sector Education and Training Authority database.
- Approximately 50,198 healthcare workers on this database.
- These healthcare workers included doctors, health facility managers, nurses, pharmacists, physiotherapists and psychologists working in the public and private sectors.



Online Survey

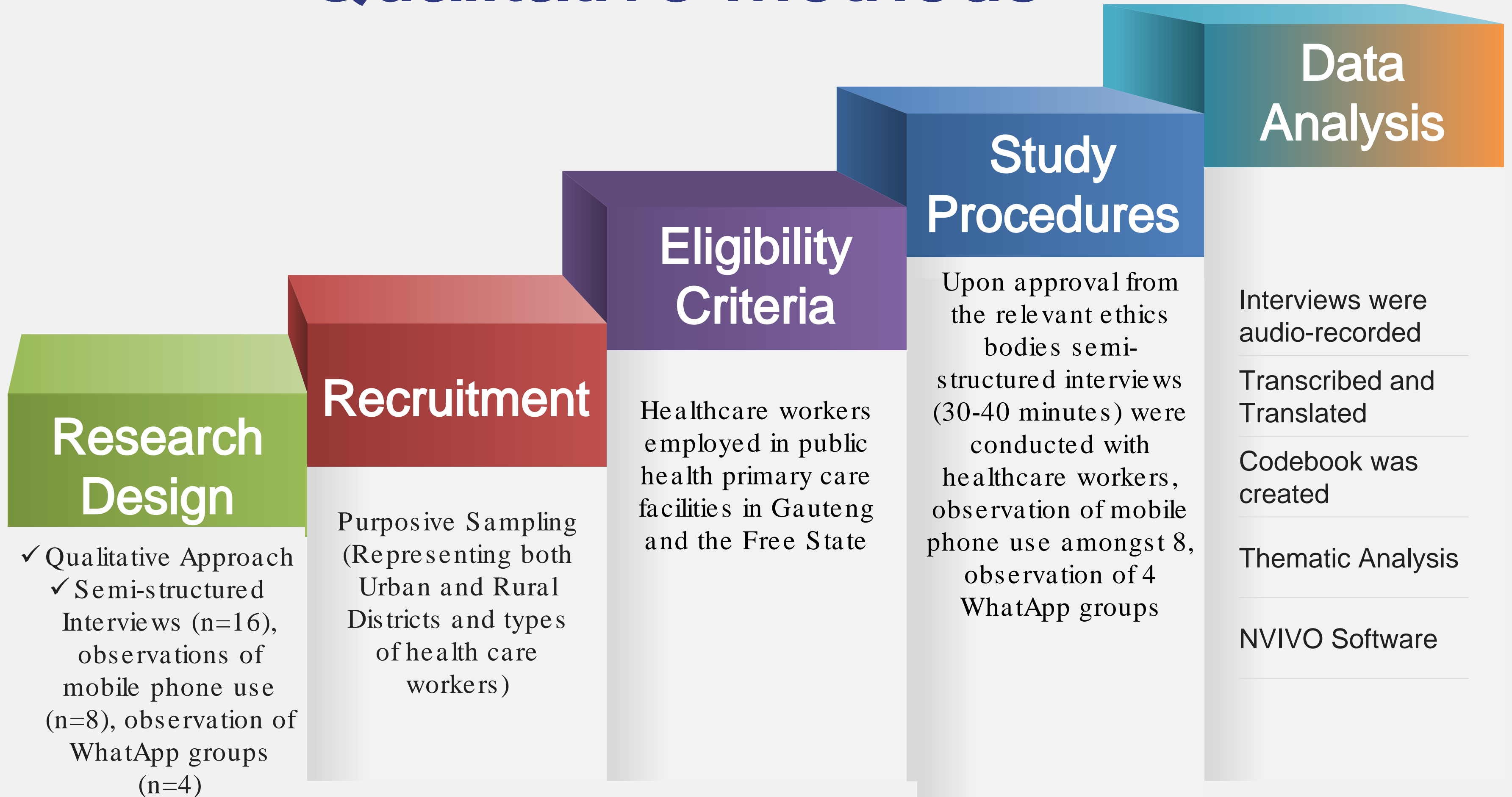
Socio-demographic data
Messaging app use data



Data Analysis

Data were analysed descriptively
using STATA SE (18)

Qualitative Methods



Survey: socio-demographic results



2 174 healthcare workers participated



Majority of participants were female (74%),
Caucasian (70%) and spoke English (54%)

Most participants (62%) worked in the
private, NGO or academic sector, 38% in the
public sector

81% were based in urban areas



Most had a postgraduate degree (58%) as
their highest level of education

51% were nurses or doctors

Survey: key findings (1)

90% of participants reported using a messaging app for work-related communication with WhatsApp (84 %) as the most used messaging app.



App use high across the public (90%) and private (90%) sectors.



Survey: key findings (2)

Participants in the public sector were more likely to use messaging apps more than once a day in their work (63,3%), compared to participants from outside the public sector (44,25%)



Nearly 95% of participants belonged to at least one messaging app group, with public sector workers more likely to participate in five or more messaging groups



Purposes for using mobile phone messaging apps to communicate with colleagues

Participants reported using messaging apps for:

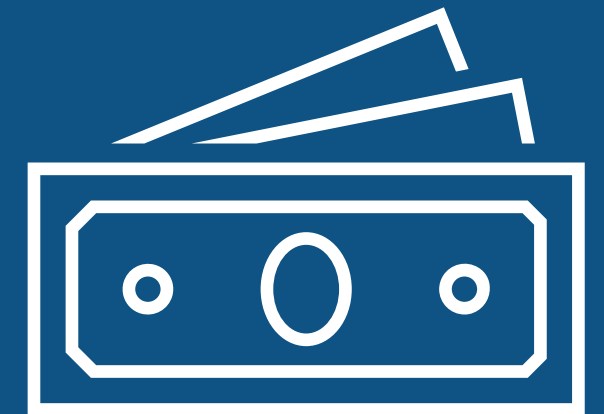
- Connecting with colleagues in the same facility or district (52%)
- Discussing patient referrals (51%)
- Asking for advice on patient clinical management (48%)
- Sharing or receiving new clinical guidelines (43%)

Purposes for using mobile phone messaging apps to communicate with patients

- Participants reported using messaging apps to communicate with patients for:
 - Sharing appointment times and reminders (45%)
 - Providing advice on health issues (29%)
- Messaging apps were not commonly used for contacting patients who had defaulted from treatment or to send test results to patients
- Communication with patients via apps was more common among health providers in the private sector

Allowances to support mobile phone use

- Most healthcare workers (79%) did not receive mobile phone data allowance
- Health providers in the private sector were twice as likely as those in the public sector to receive a mobile phone allowance
- Variation across healthcare workers:
 - Facility managers most frequent (37.3%)
 - Pharmacists least frequent (11.3%)



Qualitative results: interview participants

	Gauteng	Free State
Professional nurse	4	4
Pharmacist	2	0
Enrolled nurse	1	0
Community health worker	1	2
Data clerk	0	2

Purposes for using WhatsApp (1): clinical advice and referral

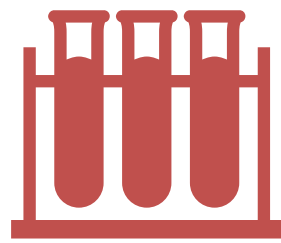
Getting advice and updates on clinical issues:

*WhatsApp, it's faster than instead of waiting for someone from the district to come and tell us about the new guideline then we have it already someone just sent it to us, so I think it makes it easy to get information. **IDI-013-Professional Nurse-FS***

Referring patients to other facilities:

*We use WhatsApp to book patients especially antenatal because we don't have landline phone and then sometimes, you find that mobile phone that you're using has limited airtime. But if I have data, at least I'm able to call sister and beg her on that side. So, it's more for referrals especially for those that need to be booked, because with antenatal clients, you cannot just refer without booking. It assists a lot with booking through WhatsApp. **IDI-014-Professional Nurse-FS***

Purposes for using WhatsApp (2): communicating with patients



Getting patient
test results from
the national
laboratory



Booking appointments
for patients at other
facilities or referral
hospitals



Searching for
information requested
by patients



Checking that patients
have received
appropriate care

Purposes for using WhatsApp (3): communicating with patients

- *“I do use my phone like when I need results. When I need to call the family for a patient, I go to the office and use the phone, just to avoid that when I use my personal phone someone may store it, you know we have caller ID.”* **IDI-002-Professional Nurse-JHB**
- *“ If I don’t find her [patient], I would have to go back again if I went there, and the house is locked? but if I communicate with her through WhatsApp, I am able to get information which I was supposed to get if I went there personally and that one it’s transport and time. It involves many things.”* **IDI-012-Community Healthcare Worker-FS**
- *“ So, they’re able to contact me on WhatsApp saying we see this kind of medication, we don’t understand, please help us, what is the medication for? Then I will explain that it is the same medication and a different container due to the different company. So please don’t stress it is the same medication she has been taking, she should keep on taking it as she was.”* **IDI-007-Community Health Worker-JHB**

Purposes for using WhatsApp (4): communicating about commodities

- Communicating with stores and other facilities about commodities and stock shortages
- Sharing information on overstocked medicines that are due to expire and could be re-distributed to other facilities to reduce waste
- Using a district-level messaging group to report re-order levels for medicines
- Checking with stores that specific commodities are available before travelling to collect them



Purposes for using WhatsApp (5): Communicating about commodities

“Guys, please share panado, we’re running out of panado whoever has more panados please give to the others” **IDI-003-Facility-Manager- JHB**

“Usually if there’s something missing or there’s a shortage of certain material we need, then we what? We communicate with each other then, maybe there’s more files or there’s no certain consumable stuff we use so that you’re aware if you wanted this and it’s not available or whatever the case may be.” **IDI-015-Professional Nurse**

Purposes for using WhatsApp (6): communication among staff



Using messaging apps to find out where in the facility a particular colleague is



Sharing information needs with others, e.g., questions on specific programmes, commodity stockouts concerns



Getting ideas, information and ways of managing clinical issues from other settings



Sharing information on training opportunities and workshops and sharing learning from these with other colleagues in the messaging groups



Sharing information on research that will be conducted in the facility and asking who would like to participate

Ensuring patient confidentiality

Healthcare workers were aware that they should not share personal patient information via WhatsApp:

- *“There are some things that you also know as a person I cannot share, I cannot share patient information on the group, so what I do is I ask on the group who works in this facility? And once the person responds, I approach them privately.”* **IDI-016-Case Manager-FS**
- *“No, we don’t share the personal information of a patient. No, we don’t share such. Because you just say I had a patient that has 1,2,3,4 so she needs help, I think it could be this, but I don’t know can somebody help? That is how to put it, like that, not specifically to be able to identify a patient “.* **IDI-002-Professional Nurse-JHB**

Perceived advantages of WhatsApp Use (1)

Simple to use and facilitates faster responses to queries

Allows health professionals to continue work when there is a power failure

Enables communication with many people through one message

Allow messages to be targeted to specific groups, such as facility managers in a health district or all clinicians in a health facility

Perceived advantages of WhatsApp Use (2)

I use it to submit reports, workload reports so we just take a picture of it and then send it into the group.

It's quicker and convenient rather than putting it on a stick and take the stick and go to the manager's office and then send it via a stick, so it's quicker.

IDI-009-Data Clerk-FS

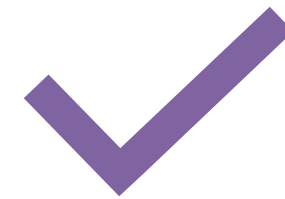
Challenges with mobile phone use at work (1)



Expectation for use
of personal
resources (phone
and data)



Negative impacts on
work-life balance



No clear guidelines
or regulations



May potentially
disadvantage those
without smart
phones

Challenges with mobile phone use at work (2)

*"We are using our personal phones, our personal data and we are not earning anything like there's nothing reimbursement or whatever on that, but then the employer is now very comfortable even sending an SOP or a new guideline on your WhatsApp. And then they'll expect that when they come here it's already printed and is there, you have it as a copy, so I think it's abused." **IDI-013-Professional Nurse***

*"Personally, I would say it's me and everybody who uses WhatsApp pay for themselves. It's painful or hurtful but well it is what it is I have accepted it, it's not a problem. Financially well I can say it does affect me, it does affect me because at times you find that if you don't have data and you will miss out like information you see." **IDI-010-Community HealthCare Worker-FS***

Findings: health worker observations (1)

We observed 8 healthcare workers. The mean duration of the observation period was 83 minutes (range 60-135)

All of the health professionals had mobile phones except one that used a clinic-owned tablet

Two of the health professionals had clinic-owned mobile phones while the rest used their personal mobile phones

Two of the health professionals observed did not use their mobile phones during the period of observation

Findings: health worker observations (2)

- Number of times the device was used ranged from 1-4 times during the observation period
- Types of mobile phone use:
 - Making a phone call to a patient, colleague in the same or another facility or receiving a phone call from a patient
 - Calling a colleague who wasn't at work
 - Checking laboratory results on an online database (NHLS lab track)
 - Sending a WhatsApp message to a facility group chat to call a meeting or checking messages on a facility WhatsApp group
 - Using the camera of a phone to take a picture of a request form or of blood samples

Findings: WhatsApp group observations (1)

- We observed 4 WhatsApp groups
- Two of the groups included staff in a specific health facility context while two aimed to support rural healthcare professionals in two provinces
- Mean of 34 participants each (range: 23 to 47)
- Observation period 4-7 weeks

Findings: WhatsApp group observations (2)

- Across all four groups, the most common focus of the message threads was:
 - Sharing news and other local information e.g. information on forthcoming meetings or articles from local news platforms
 - Sharing administrative information relevant to human resource and other non-clinical issues
 - Administrative information relevant to the clinical work of the facility
 - Reporting medicine or commodity stockouts
 - Sharing information on new clinical guidelines or regulations



Strengths and limitations of the study

- We applied three complementary qualitative approaches and a quantitative survey that provide different perspectives and allow for data triangulation
 - These showed largely consistent findings
- We were able to gather data on both participants' views and what they did in practice
- It proved largely feasible to observe messaging groups and to shadow healthcare providers within the workplace – novel approaches which have not been commonly applied to explore this topic
- Wide range of health care provider cadres including facility and community-based
- Survey respondents mostly English speaking, urban-based, private-sector female Caucasians
- Qualitative sample all public-sector

Conclusions

- Informal use of messaging apps by healthcare workers to perform their daily work is **common** and **supports core healthcare functions** in public and private sectors
- The widespread use of apps most likely highlights both their **ease of use and wide penetration**, but also **gaps or constraints within formal systems** for sharing information with patients and among healthcare workers
- Reliance on short term adaptations **may mask system deficiencies** and may result in planners failing to see the challenges and the need for longterm sustainable solutions
- There is a **personal financial cost to healthcare workers** – most reported that they do not receive allowances to support this use, particularly those working in the public sector

Implications for policy and practice

Invest in health facility infrastructure that supports these 'bottom-up' communication functions

Recognize both the benefits and challenges (work life balance)

Include messaging apps in the digital health strategy along with the provision of appropriate infrastructure and resources, such as Wi-Fi access, to support this use

Develop guidance for healthcare workers on appropriate ways of using messaging apps as clinical and management support tools

Thank you!

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tanya.doherty@mrc.ac.za

