

RESEARCH

Open Access

## Abstract

**Background** The Mobile Renewal System (MRS) has increased insurance renewal rates among Ghana's National Health Insurance Scheme (NHIS) subscribers. However, population coverage with active NHIS membership remains insufficient for Universal Health Coverage (UHC) ambitions, especially among informal workers. This qualitative study aimed to explore stakeholders' (technical experts and informal workers) perspectives on the implementation and use of mobile renewal system (MRS) add-on(s) to improve NHIS uptake in Ghana.

**Methods** Technical experts were interviewed in depth based on their experience and ability to provide information on developing and implementing mobile health technology, and 17 focus group discussions were held with informal workers in Accra and Kumasi between March and August 2022. Thematic analysis was used to identify recurring themes and categories.

**Results** Participants (13 technical experts and 96 informal workers) suggested several add-ons to improve the use of the MRS. These included reminders to renew, mobile registration of new members, an automatic renewal option, a savings wallet, and a facility locator. These add-ons could potentially encourage more people to use the MRS and further increase insurance uptake. For implementing and utilizing the MRS and these add-ons, reliable technological infrastructure, stakeholder involvement, adequate funding, training, and awareness campaigns were considered

---

<sup>†</sup>Verena Struckmann and Ruth Waitzberg Shared last authorship.

\*Correspondence:  
Fati Ibrahim  
fati83us@gmail.com

Full list of author information is available at the end of the article

## Introduction

Many low- and middle-income countries (LMICs) are piloting a wide range of digital health innovations in their health systems to achieve Universal Health Coverage (UHC), a fundamental target of the Sustainable Development Goal (SDG) 3.8 [1–3]. UHC implies that all people can access quality health services without financial hardship [4]. Achieving UHC requires reforms of health financing arrangements in many LMICs to ensure that sufficient resources are raised and used to provide financial protection to the population [5].

In Ghana, healthcare used to be financed largely through out-of-pocket (OOP) payments for close to 2 decades until 2003, when the government introduced a National Health Insurance Scheme (NHIS) [6, 7]. These high OOP requirements for healthcare caused financial hardship and posed major access barriers [8–10]. The introduction of the NHIS was intended to remove these financial barriers, offer financial risk protection, and make public healthcare more accessible through public financing of healthcare and abolishing user charges [11].

The NHIS requires a yearly renewal process for all members. Members are categorized into two groups – (1) a premium-paying group and – (2) a non-premium-



two million residents as of the 2021 census. The metropolis encompasses nine sub-metropolitan districts: Asokwa, Bantama, Kwadaso, Manhyia, Nhyiaeso, Oforikrom, Suame, Subin, and Tafo. As a significant commercial hub,



rates. Convenience includes a simpler and more efficient renewal process that is constantly available to individuals. This has enhanced access to renewal by reducing travel costs and waiting time.

*“Formerly we used to travel long distances and queue at the various registration centres for renewal and new registration. With the introduction of the phone renewal approach, you can sit in the comfort of your home and do it without any stress.” (FGD-Anloga).*

*Renewing a NHIS card has been made easy and less expensive. You don't have to travel and pay transportation fares to and from any of the NHIS district offices to have your insurance renewed. You can do it wherever you are without hassle. The NHIA has seen an increase in renewals year in, year out.” (IDI-012E)*

While informal workers and technical experts particularly from NHIA agreed that the MRS has improved convenience, the latter group reported an additional benefit: higher satisfaction with daily work due to decreased workload and reduced office congestion.

*“... unlike before, you found people crowded and struggling to get their cards renewed for them. Now it's easy, you can renew in the comfort of your home. So, there is no congestion in our offices” (IDI-004I).*

#### Add-ons with the potential of enhancing the use of the mobile renewal system

During the discussions, the participants raised many ideas for MRS add-ons to promote NHIS uptake and renewal rates. In addition, the research group asked for participants' opinions on a savings wallet that could facilitate savings for NHIS renewal. These add-on ideas are illustrated in Fig. 1 (below).

Participants from both study sites and representatives of different stakeholder organizations shared insights on these Add-on(s). These include reminders for the expiry date and the need to renew, mobile registration (currently not possible digitally), automatic renewal of NHIS policy, a savings wallet to save and pay your renewal premiums, and a facility locator.

#### Reminders

Before the introduction of the MRS, NHIS subscribers received physical cards with printed start and expiry dates, which served as convenient reminders for annual renewal. This ensured that individuals were aware of their insurance status and could plan for timely renewal.

However, after implementing the MRS, subscribers no longer receive physical NHIS cards, eliminating the printed expiry date reminder. As a result, it has become more challenging for them to keep track of their insurance status. Now, subscribers must actively check their expiry date by dialing a USSD code and following

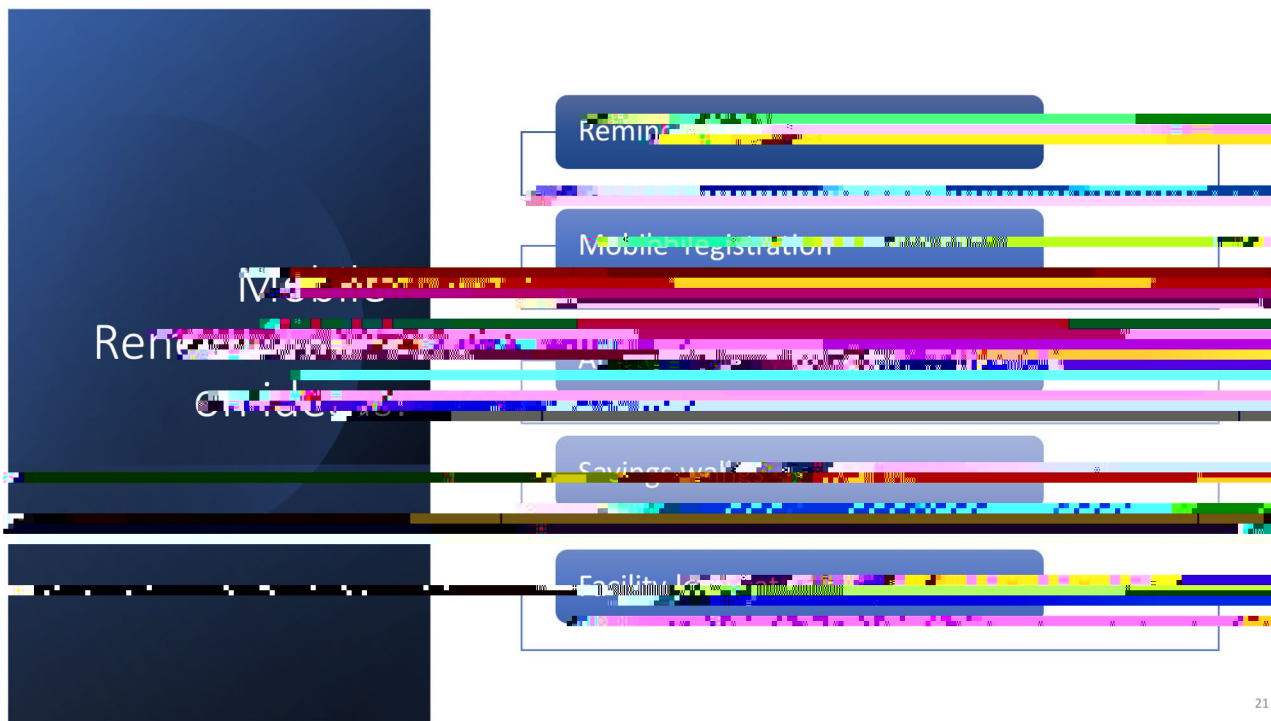


Fig. 1 Mobile renewal add-ons ideas

prompts. In practice, many individuals only realize their insurance has expired when they attempt to access healthcare services.

While the MRS has streamlined the renewal process by making it digital, its lack of a built-in reminder mechanism creates a barrier to timely renewal. This challenge is evident in Kumasi and Accra, where participants emphasized the need for renewal reminders. In Kumasi, participants highlighted how the absence of physical NHIS cards has increased the likelihood of forgetting renewal dates post-MRS implementation.

*“... the date for the renewal escapes us [subscribers] because it is not available when you use the phone to renew your insurance. (FGD-Anloga).*

They proposed reminders as a solution to bridge this gap. Similarly, participants in Accra echoed these sentiments, emphasizing the convenience of reminders to ensure timely renewals.

*“So, they should remind us by sending us a message that by this date our insurance will expire. That can help a lot of us to renew on time. (FGD – Nima).*

Stakeholder organizations, including NHIS offices, supported this idea, stating that reminders could reduce lapsed memberships and improve renewal rates.

#### *Mobile registration*

To become an NHIS member, first-time registrants must visit the NHIA office in person, take a picture, and provide socio-demographic information such as name, date of birth, marital status, phone number, and community of residence.

Technical experts particularly noted the challenges associated with first-time NHIS registrations, as they require physical visits to NHIA offices. Experts proposed that enabling mobile registration through the MRS could simplify the process, increase convenience, and improve accessibility. Respondents in Kumasi and Accra highlighted busy schedules (time) and travel costs for first-time registrants, especially in peri-urban areas, as a challenge and agreed that it could be beneficial.

*“... you would want people who don't have cards, who have never joined the NHIA. You want them to also have a very easy and convenient way, just like the renewal, to come on as first-time registrants to do the registration on the phone.” (IDI- 005I).*

#### *Automatic renewal*

Participants who are technologically illiterate or face literacy challenges reported greater difficulties in renewing

their NHIS with the MRS independently than those with more digital or literacy skills, making them more reliant on others for renewal.

Technical experts emphasized that an automatic renewal feature would benefit subscribers particularly those with technological or literacy challenges and demanding schedules. They highlighted that linking automatic renewal to mobile money (MoMo) could further reduce human dependencies in the renewal process compared to the current system.

Participants in Kumasi and Accra acknowledged that automatic renewal could improve retention more than the manual approach. Still, they stressed the importance of stronger consent mechanisms and seamless integration with mobile money platforms to minimize the risks of errors or unauthorized transactions.

*“ If you have money in your Momo account, there*

Technical experts emphasized the need for a tool to better direct subscribers to pharmacies and clinics within their communities, making access to services more immediate. Similarly, participants in Kumasi noted that a locator could enhance the accessibility of NHIS services and more clearly demonstrate the scheme's practical benefits compared to the existing approach.

As the range of accessible providers becomes more visible, the NHIS could be perceived as more useful and comparatively more worthwhile for enrollment than in its current form.

*"A feature that would direct me to all the NHIS-accredited providers within a radius... of your locality... like NHIS accredited pharmacies where I can just walk to... and then I'll get the medicine for, for free" (IDI- 0011).*

#### Factors influencing the implementation of the add-ons

Participants mentioned several factors they believed could influence the implementation of the proposed add-ons. These are shown in Fig. 2 (below);

##### *Infrastructure*

Participants, mainly the technical experts, believed that the smooth functioning of mobile technology operations relies heavily on a strong and reliable database server to store, process, and transfer information. Implementing

an add-on(s) might require expanding the technological infrastructure to accommodate the increased workload due to the introduction of the add-on(s). This improves internet stability and avoids delayed response or feedback on transactions or renewal processes. Participants expressed that upgrades and or expansion of technological infrastructure are key to ensuring a seamless renewal process.

*"Again, for the implementation stage, do we have the needed resources in place infrastructure-wise, if there is the need to expand, we should do that to avoid interruptions of work now." (IDI- 008E).*

##### Institutional readiness

Institutional readiness regarding the availability of experts and funding was seen as a critical predisposing factor that could hinder the implementation process.

##### *Avaiian*





*Insurance literacy*

Technical experts perceived insurance literacy, which includes understanding the role of insurance in spreading the risk of the cost of illness over time and across people, as an important factor that may increase subscribers'

platforms for transactions such as MoMo reduces potential concerns or hesitancy to use the MRS and add-ons.

*"If I can use my phone for other purposes like sending messages, transferring money from my MoMo account, once I already know how to use the phone, it will help me to use the new intervention" (IDI-005I).*

Likewise, past negative experiences such as having fallen victim to mobile payment fraud, reduced trust in adopting any form of digital payment such as the savings wallet. Trust plays a significant role when it comes to digital payment adoption and use, as expressed by a technical expert:

*"If you've ever been a victim of mobile money fraud, that alone is enough to prevent you from trusting such initiative [saving wallet]. Experience with fraudsters will deter people from using it" (IDI-010E).*

### User-centered design

Participants reported difficulties when attempting to complete the renewal procedure on their own, including the inability to read and understand the instructions and not being acquainted with using mobile phones. Therefore, the MRS and add-ons should be user-friendly and simple for those not experienced with mobile phones.

The idea of changing it into a smartphone app to enrich the user experience was welcomed. Still, participants quickly suggested that developers should maintain the USSD form of the existing MRS, which works on all kinds of phones, including non-smartphones [yam phones], and upgrade it with additional functionalities to make it simple and easy for subscribers to use. Arguments considered that this ensures that the MRS is not restricted to only a few with smartphones and access to an internet connection.

*“What this brings to mind is internet issues, the development should be done for everybody to be able to use. Meaning it can be done as an App requiring the internet and smartphones. We should also consider the other group of people in rural areas with poor internet connectivity and probably have a “Yam phone” [non-smart phone]. So, we should not restrict it, it should be usable on both USSD and App.” (IDI- 008E).*

*“The system should be simple and easier for people to follow. Should be concise and easy for everyone whether you are well-educated or not, so that you can do it yourself.” (FGD- Nima)*

### Additional cost

Currently, using the MRS to renew an NHIS membership requires that the premium needs be paid digitally through the MoMo account. The introduction of electronic transaction user fees (e-levy) could negatively affect mobile payment utilization due to perceived additional charges on use. This could hinder the acceptance and utilization of mobile payment services, affecting the use of the MRS and the savings wallet.

*“Right now, what will prevent me from using the savings wallet is the charging system on it. I am referring to the recent e-levy charges imposed on our digital transactions” (FGD- Korle Gonno).*

### Incentives and rewards

Participants, mostly the informal workers, recommended offering incentives, such as discounted renewal fees or loyalty rewards, as a means of promoting consistent use of the add-ons

*Giving us a discount for group renewal will be good.  
Let me give you an example, if I have 10 children*

technologies, as it potentially strengthens users' trust, confidence, and satisfaction with the digital tool.

#### Perceived benefits of MRS

Our findings suggest that technical experts and users experienced improvements in the renewal process due to the MRS. This result is consistent with studies that have emphasized the benefits of mobile technology in overcoming barriers to health insurance coverage in LMICs [2, 22, 47





39. Gyam A, Mensah KA, Oduro G, Donkor P, Mock CN. Barriers and facilitators to electronic medical records usage in the emergency center at Komfo Anokye teaching hospital, Kumasi-Ghana. *Afr J Emerg Med.* 2017;7(4):177–82.
40. Creswell JW. *Qualitative inquiry and research design: choosing among ve traditions.* SAGE: 2007.
41. Van Manen M. *Researching lived experience: human science for an action sensitive pedagogy.* Routledge: 2016 Jun. p. 16.
42. Ghana GS. *Population and housing census: population of regions and districts.* Ghana Statistical Service: 2021.
43. Emmel N. *Sampling and choosing cases in qualitative research: A realist approach.*
44. Silverman D. *Doing qualitative research.*
45. Guest G, Bunce A, Johnson L. How many interviews are enough? An experiment with data saturation and variability. *Field Methods.* 2006;18(1):59–82.