BMJ Open

# How can we elicit health workers' preferences for measures to reduce informal payments? A mixed methods approach to developing a discrete choice experiment in Tanzania

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**To cite:** Binyaruka P, Angell B, McKee M, *et al*. How can we elicit health workers' preferences for measures to reduce informal payments? A mixed methods approach to developing a discrete choice experiment in Tanzania. *BMJ Open* 2023;**13**:e068781. doi:10.1136/bmjopen-2022-068781

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (http://dx.doi.org/10.1136/bmjopen-2022-068781).

Received 03 October 2022
Accepted 02 June 2023



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## ABSTRACT

**Objective** While discrete choice experiments (DCEs) have been used in other fields as a means of eliciting respondent preferences, these remain relatively new in studying corrupt practices in the health sector. This study documents and discusses the process of developing a DCE to inform policy measures aimed at addressing informal payments for healthcare in Tanzania.

**Design** A mixed methods design was used to systematically develop attributes for the DCE. It involved five stages: a scoping literature review, qualitative interviews, a workshop with health providers and managers, expert review and a pilot study.

**Setting** Dar es Salaam and Pwani regions in Tanzania.

**Participants** Health workers and health managers.

**Results** A large number of factors were identified as driving informal payments in Tanzania and thus represent potential areas for policy intervention. Through iterative process involving different methods (qualitative and quantitative) and seeking consensus views by diverse actors, we derived six attributes for a DCE: mode of payment, supervision at the facility level, opportunity for private practice, awareness and monitoring, disciplinary measures against informal payments and incentive payment for staff if a facility has less informal payments. 12 choice sets were generated and piloted with 15 health workers from 9 health facilities. The pilot study revealed that respondents could easily understand the attributes and levels, answered all the choice sets and appeared to be trading between the attributes. The results from the pilot study had expected signs for all attributes.

**Conclusions** We elicited attributes and levels for a DCE to identify the acceptability and preferences of potential policy interventions to address informal payments in Tanzania through a mixed-methods approach. We argue that more attention is needed to the process of defining attributes for the DCE, which needs to be rigorous and transparent in order to derive reliable and policy-relevant findings.

## STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This is the first study to develop a discrete choice experiment (DCE) to understand the preferences of health providers over policy alternatives to overcome informal payments.
⇒ Used a mixed-methods approach including literature review, qualitative interviews and workshops, expert review and a pilot study to develop a DCE.
⇒ Studies focusing on informal payments specific were few, especially in sub-Saharan Africa, which limited the literature review for DCE development.
⇒ Pilot study used a small sample size due to challenges with recruitment in the study area.

## INTRODUCTION

Informal payments are defined as informal transactions between patients and providers, in kind or in cash, outside official channels.[1 2] While the borders can be blurred, for example, when they keep underfunded facilities working,[3] they are increasingly seen as falling within the definition of corruption, defined by Transparency International as 'the abuse of entrusted power for private gain'.[4] Healthcare is especially vulnerable to informal payments given asymmetric information, uncertainty and power imbalances between different actors.[5] This enables providers to charge fees without fear of consequences or patients to offer payments they see as either necessary or beneficial to the care received.[5–7] Informal payments can have negative effects, acting as barriers to care and increasing catastrophic spending (the sand in the wheel hypothesis)[8 9] or positive effects, removing inefficiencies, bypassing bureaucracy and promoting competition (grease in the wheel hypothesis);[10] or may reflect cultural norms of gratitude, often involving gifts which, if monetary, are of very little value but, in other contexts, may take the form of tokens such as chocolates, although there is a spectrum from trivial to important specific to

each context.[11–13] In Tanzania, informal payments are a common manifestation of corruption.[14–20]

Informal payments are difficult to eliminate. Gaitonde, *et al*[21] identified several strategies to tackle corrupt practices, including an independent authority on corruption, increasing awareness among healthcare workers and the public, better pay and enforcing discipline. However, there was little empirical evidence that they worked. Some argue that this is because top down measures fail to consider local contexts and incentives (in the principal-agent relationship).[3 22] Thus, individuals with hierarchical power can avoid sanctions.[23] This calls for a complex mix of nuanced approaches that take account of the factors driving behaviour of providers.

We argue that some individuals will stop taking informal payments if we can change the incentives that influence their behaviour. Yet this has been overlooked in the literature. It requires understanding of factors that shape their behaviour, how they act, preferences of health providers and corresponding policy responses and the trade-offs they will make.[22 24] It also requires an understanding of how these elements vary among types of providers and who is most susceptible to interventions.

### Discrete choice experiments

Discrete choice experiments (DCEs), which elicit preferences on services, products or public policies, are increasingly used in the health field.[25–27] They are based on stated-preference surveys where respondents are asked to make a series of choices between a number of hypothetical alternatives that differ across several key factors.[27–29] By analysing the choices of respondents, DCEs provide information on the relative importance of the different attributes, trade-offs they are willing to make and the potential acceptability of different policy packages to them.[30]

The choices presented to respondents in a DCE should be relatable and the attributes and levels selected must reflect the local context and be amenable to change.[27 31] They should also be the most important factors motivating providers. Consequently, it is critical to get the attributes right, capturing key factors driving the behaviour being investigated, and presenting them in an intelligible manner to respondents. Inappropriate or trivial attributes can reduce the value of the DCE's findings.

Despite these considerations, there is little literature on developing DCE attributes. Best-practice recommendations advocate a rigorous, multistage process triangulating data gathered using different research methods.[31 32] However, there is little guidance on how to translate what may be extensive qualitative data into focused, policy-relevant attributes. Most papers report this process only briefly.

Here we document the systematic process we used to develop attributes and levels for a DCE to inform feasible strategies to tackle informal payments among frontline healthcare providers in Tanzania. We hope that this detailed account contributes to filling this evidence gap and provides guidance for future research on preferences, especially when researching sensitive topics.

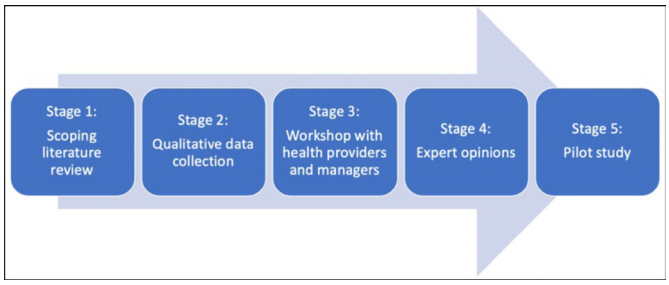



**Figure 1** Summary of key stages of developing discrete choice experiment attributes and levels.

## METHODS

We developed attributes and levels for the DCE using a five-stage mixed-methods process: a scoping literature review, qualitative interviews, a workshop with health providers and managers, an expert panel to narrow and fine-tune context-specific attributes and lastly, a pilot study (figure 1). Each stage informed the subsequent one and particular care was taken to triangulate data extracted at different stages.

### Stage 1: scoping literature review

This study is part of a larger project that seeks to reduce corruption by understanding the context in which it arises and persists, with a focus on the political settlements that determine the distribution of power within a community and the incentives that influence the behaviour that is observed.[33] It concentrates on interventions aimed at practices that have high impact and which are politically and economically feasible to address. Informal payment is one of the practices covered in the project. Others include absenteeism, diversion of patients to private facilities, procurement abuses and theft of drugs and supplies. We conducted a scoping literature review[14] to extract, initially, evidence on corrupt practices in the Tanzanian health sector and, for this study, used the findings relevant to informal payment. The review included literature published in English between 1995 and 2018 in Tanzania, including published peer-reviewed and grey literature (government reports, institutional reports, working papers, evaluation studies and reports and media coverage). The search was done in the following databases: PubMed, Google Scholar and websites of organisations working on this issue. The review included 15 literatures with some contents related to informal payments. The extraction of information focused specifically on causes/determinants/drivers of informal payments and identified/proposed strategies for mitigating informal payments. Consistent with our conceptual approach, this went beyond the act of taking payments to explore issues of supply of health workers, motivation, and accountability.

Table 1 Characteristics of qualitative study respondents

| Respondents | Sample size |
|---|---|
| By provider cadre | |
| Medical doctors | 4 |
| Clinical officers | 7 |
| Nurse/midwives | 9 |
| Non-medical health staff (health managers) | 7 |
| By position | |
| Health facility in-charges | 3 |
| Normal health workers | 17 |
| RHMT and CHMT representative (health managers) | 7 |
| By location | |
| Dar es Salaam region | 8 |
| Pwani region | 19 |
| Total | 27 |

CHMT, council health management team; RHMT, regional health management team.

### Stage 2: qualitative data collection

The review was presented at a workshop with Tanzanian policymakers and health providers to elicit their views on the relative importance of factors driving informal payments and potential responses. We then conducted qualitative interviews with key informants and stakeholders (table 1) using a qualitative interview guide (online supplemental file 1). These interviews sought a detailed understanding of informal payments, the personal and institutional drivers and potential policy responses that might be acceptable in the Tanzanian context. We drew a purposive sample, focusing on those in service delivery and/or having managerial oversight, but with representation of different roles, positions and regions of residence. Data were collected in Pwani and Dar es Salaam regions by two experienced qualitative researchers between January and February 2019. All interviews were tape-recorded in Swahili, transcribed and translated into English. The translated text together with field notes were analysed using content thematic analysis. We used a predominantly inductive data analysis procedure—with two of the authors reading and re-reading the data, identifying key themes and creating codes and collapsing/removing overlaps between codes. Some codes were derived from the scoping review. The initial analysis was validated in the first consensus-building workshop and through a discussion with the broader research team. We specifically included three main themes related to informal payments: the extent of the practice, potential drivers and potential responses.

### Stage 3: a consensus-building workshop with health providers and managers

A second workshop, facilitated by the research team, was held in Dar es Salaam in May 2019 with 8 health managers and 10 health workers from those interviewed in stage 2. This served to validate the findings from the interviews and seek agreement on the most important factors and potential responses. This enabled in-depth discussions on what responses might be actionable and feasible, thereby informing the choice of attributes for the DCE.

### Stage 4: expert review

Potential DCE attributes and levels were reviewed by the authors, a multidisciplinary team familiar with the Tanzanian context and use of DCEs. We examined the key themes and categories that emerged from the first three stages and agreed on the most important factors to include in the DCE, informed by theories suggesting that health providers would trade some restrictions on their activities against certain gains.[23 33 34] We prioritised, and thus reduced, the attributes while maintaining the most important features of jobs and potential interventions. This was necessary because having many attributes increases the complexity of the choice sets and can lead to errors or dropouts.[35–37] We reviewed the candidate attributes multiple times to simplify them while seeking the most important attributes. Attributes and levels were translated from English to Swahili with the wording discussed with local experts to ensure they were relevant and understandable to the study population.

### Stage 5: pilot study

We used the six candidate attributes and corresponding levels to generate a D-efficient DCE design with 12 scenarios using Ngene software (V.1.2.1) for piloting. It involved an unlabelled experiment with two alternatives (Job A and Job B) and an opt-out (for neither job). Prior estimates for all variables were assumed to be 0 to generate the experiment for the pilot. The pilot study was conducted via tablets with 15 public health workers and sought to: (1) obtain prior estimates for the parameters to inform the final DCE design; (2) to assess the wording, translations and the validity of the levels proposed; and (3) to assess the feasibility of the study in terms of estimated time for data collection and respondents' reactions. We organised a feedback session after piloting to capture the key observations made. Pilot data were then analysed in NLOGIT software (V.6) using multinomial logistic regression models.

### Patient and public involvement

No patient involved.

## RESULTS

### Results from literature review (stage 1)

Two main drivers of informal payments emerged from the scoping review:[14] individual factors (eg, personal attitude, peer pressure, income) and systemic factors reflecting a weak health system.

Several ongoing initiatives to strengthen the Tanzania health system were identified that might reduce informal

payments.[14] Results-based financing is a strategy that was implemented in nine regions providing performance-related incentives to health providers[38] and which might encourage them to improve service delivery, including less informal payment.[39] Second, direct health facility financing involves direct transfer of money from central government to health facilities,[40 41] strengthening fiscal decentralisation and improving autonomy at the facility level. This initiative ensures more resources are available at facility level, which could improve the working environment and thus reduce informal payments. Third, reforms to the Community Health Fund[42] and National Health Insurance Fund would reduce out-of-pocket payments and thus minimise cash transactions.

Improved governance was also seen as important, strengthening health facility government committees, which oversee facility management and provide a mechanism to hold health providers accountable to their communities.[43 44] Other mechanisms include social accountability initiatives (eg, community score cards, social accountability mapping),[45–47] complaint boxes, measures to raise community awareness, and reporting hotlines.[18 48]

### Results from qualitative interviews (stage 2)

Most participants interviewed reported a reduction in informal payments in the Tanzanian health system, but this varies by facility type and location.

> *Informal payments are more prevalent in hospitals and health centres because in hospitals and health centres there are many specialized services which are not available at the lower level of health facilities (ie, dispensary).* (health manager 2, Dar es Salaam)

Some departments, especially in urban centres, were less likely to have informal payments. These included those that did not charge official user fees (eye clinics, child health, HIV, tuberculosis and diabetes). In contrast, informal payments were commonplace in maternity units, outpatient clinics, surgical departments and the mortuary. Some transactions involved health workers acting alone, as in maternity departments informal payments were expected by night staff if mothers were to receive attention, a time when there was little supervision, or in mortuaries.

Informal payments in outpatient and surgical departments involved networks of actors that linked patients to junior and senior nursing staff and doctors. In the surgical departments, these networks enabled patients to move up the waiting list, with payments distributed among many actors, and thus involving large sums. This reflected the very long waiting times, in part due to a shortage of specialists. These networks involved the most senior members of staff among staff who often worked together over long periods. Some informants described how certain doctors would gain a reputation for taking informal payments and so more junior staff who wished to increase their salaries would wish to work on shifts with them.

Long queues in outpatient departments incentivised patients to pay to reduce the delay to see the medical officer on duty. In this setting, fewer people were involved (the triaging medical attendant, patient and doctor/medical officer) and the sums paid by each patient were less than for surgery.

Proposals from participants included a mix of improving individual incentives (timely payment of allowances and better work environment), institutional (effective supervision during all critical times) and promoting public awareness of what formal payments are required.

> *One strategy to address informal payments is to have regular supportive supervision in health facilities.* (IDI, health manager)

> *In order to reduce informal payments, the health providers should be receiving their allowances on time and they should also be promoted, they should not be stressed about money.* (IDI, health officer, hospital)

### Results from the workshop (stage 3)

Participants in the workshop validated the qualitative findings and expanded our initial understanding of informal payments. They supported the drivers and strategies proposed in earlier stages and helped operationalise policy options for public facilities: *dual practice or permission to engage in private practice, provider incentive as salary top-up to meet their daily spending and options for public awareness creation (eg, noticeboards)*. They also explained the potential mechanisms to implement each proposal. This allowed us to develop a more concise table with a list of potential attributes and levels and associated hypotheses that underpinned them (table 2).

### Expert review (stage 4)

The expert panel made a number of modifications to the attributes through an iterative process, (from those shown in table 2 to those in table 3). This drew on the previous stages, streamlining language to increase clarity, and developing a range of policy-relevant levels for each attribute. General descriptions such as 'current practice' were replaced with wording that was specific but still broad enough to capture current practice in facilities across Tanzania. For example, the use of electronic payment and prepayment mechanisms were merged to mean no cash transaction (cashless) compared with cash only (table 3). Levels were combined if it was perceived there was no meaningful difference between them, for example, the dual practice attribute was reduced from three levels to two as two of the initial levels were deemed not meaningfully different.

Attention was paid to fine-tuning the attributes so they were linked to particular propositions, for example, 'monitoring and supervision' (table 2) was split into two attributes: *supervision at facility* (which refers to top–down enforcement strategies) and *monitoring and awareness*

**Table 2** List of conceptual attributes and attribute-levels of the discrete choice experiment through multiple stages

| No. | Attributes developed initially | Levels | Mechanisms/hypotheses against informal payments | Changes in attribute-levels through expert opinions and justifications | Final attribute-levels (in table 3) |
|---|---|---|---|---|---|
| 1. | Mode of payment | ► Electronic payment for health services.<br>► Prepayment scheme (eg, insurance).<br>► Current practice (mixed—cash, insurance and electronic payment). | ► Lessen cash transactions, reduce facility revenue leakages, increases facilities ability to address employee welfare issues (a form of provider incentive scheme), lowering the chances of informal payment especially double payments for insured. | ► Attribute 1 was slightly changed by combining electronic payment and prepayment schemes as both reflect no cash accepted; in fact, there was no meaningful difference between them.<br>► It eventually included two levels. | ► No cash accepted (electronic or insurance payments only).<br>► Cash only. |
| 2. | Monitoring and supervision (accountability measures) | ► Effective and throughout (all days and 24 hours).<br>► Random client satisfaction exit-interviews.<br>► Suggestion box.<br>► Provide a contact/hotline to report any informal practice.<br>► Taking action against those who default (an effective warning system). | ► This can decrease informal payment during the vulnerable times (night hours, weekend, public holidays, etc).<br>► HFGC members or supervisors can do random assessments through exit-interviews after clients' consultations, this may strengthen providers' accountability (eg, becomes more responsible), and reduces the chances of informal payment.<br>► Similarly, ensuring clients are providing suggestions through suggestion boxes about their experience of care, will make providers more accountable (with an effective warning system in place). | ► This was fine-tuned to be an attribute called: **Supervision at facility,** to reflect the top-down enforcement.<br>► This attribute finally included two levels.<br>► The use of hotline and taking disciplinary measures were moved to other attributes called 'monitoring and awareness' and 'measures to address informal payments', respectively. | ► Supervisor in facility 07:30 to 16:00 on weekdays.<br>► Rotating supervisor present 24 hours per day. |
| 3. | Provision of receipts | ► Always provide receipts after any payment for health service (either via cash/e-payment)<br>► Current practice (mixed—with and without receipts). | ► A receipt validates a particular payment, lowering the chances of informal payment/double payments, or paying for exempted services. | ► Attributes 3 and 4 were merged to form an attribute called: **Awareness and monitoring;** because they were deemed inter-related concepts.<br>► It included four levels. | ► Receipts required for all transactions.<br>► Facility notice board displaying services provided and correct fees.<br>► Hotline to anonymously report informal payments to health manager or board.<br>► None. |
| 4. | Public awareness creation | ► Through visible and accessible client service charter.<br>► Through repeated audio sound about service instructions. | ► Service charter will keep clients and providers informed of the acceptable norms and rights, if informed then lowers the chance of informal payment.<br>► Regular/repeated audio sound keeps clients informed about service delivery instructions. | | |

Continued

**Table 2** Continued

| | | | | | |
|---|---|---|---|---|---|
| 5. | Dual practice | ► Formally allowed to private practice at the same public facility a few hours a day/a couple of days a week.<br>► Formally allowed to practice in a private facility a few hours a day/a couple of days a week.<br>► Not allowed. | ► Engaging in private practice (for public workers) complements providers' income (as an alternative income generating activity), and this could lessen the practice of informal payment. | ► Attribute 5 was fine-tuned and called: **Opportunity for private practice**<br>► It finally included two levels, by combining the two levels (to allow private practice at the same public facility for certain hours and to allow public provider to practice in private facilities), because there was no meaningful different. | ► Dedicated time off each week (including agreement for private practice).<br>► None. |
| 6. | Shifts at work | ► Formalise shorter working hours in a day.<br>► Formalise shorter working days in a week.<br>► No shift. | ► Formal shifts (in hours/days) give free time for other income generation activities to complement their earned salary and could reduce the chances of informal payment. | ► Attribute 6 about shifts was dropped because it was considered unrealistic due to staff shortage in the Tanzanian context. | |
| 7 | Provider Incentive scheme | ► Incentive payments linked to performance-based contracts with providers.<br>► No incentives. | ► Does not make up for inadequate salaries or entitlements but a monthly/ quarterly incentive payment linked to their performance (targets achieved) could trigger positive behaviour response. These incentives will motivate providers to be more productive and lessen informal payments. | ► Attribute 7 was fine-tuned and named as: **Incentive payment for staff,** by showing a conditional performance, if facility has no informal payments in past 6 months.<br>► It included three levels. | ► No incentive payment on top of regular salary.<br>► 5% of base salary.<br>► 10% of base salary. |
| 8. | | | | ► An attribute called: **Measures to address informal payments** was introduced.<br>► It was expanded from one level in attribute 2 for enforcement measures to address informal payments.<br>► It included three levels to test the acceptability of 'negative' attributes, balancing with positive factors. | ► Disciplined at district level.<br>► Disciplined at facility level.<br>► Preferential training/ promotion for providers in facilities with no infraction for past year. |

HFGC, Health Facility Governing Committee.

Table 3 Final list of attributes and attribute-levels of the discrete choice experiment after expert opinions

| No. | Attribute | Level 1 | Level 2 | Level 3 | Level 4 |
|---|---|---|---|---|---|
| 1. | Mode of payment accepted at facility | No cash accepted (electronic or insurance payments only) | Cash only | | |
| 2. | Supervision at facility | Supervisor in facility 07:30 to 16:00 on weekdays | Rotating supervisor present 24 hours per day | | |
| 3. | Opportunity for private practice | None | Dedicated time off each week (including agreement for private practice) | | |
| 4. | Awareness and monitoring | None | Receipts required for all transactions | Facility noticeboard displaying services provided and correct fees | Hotline to anonymously report informal payments to health manager or board |
| 5. | Measures to address informal payments | Disciplined at district level, eg, warning letter that reduces opportunity for promotion | Disciplined within facility, eg, official warning | Preferential training/promotion for providers in facilities with no infraction for past year | |
| 6. | Incentive payment for staff if facility has no informal payments in past 6 months | No incentive payment on top of regular salary | 5% of base salary | 10% of base salary | |

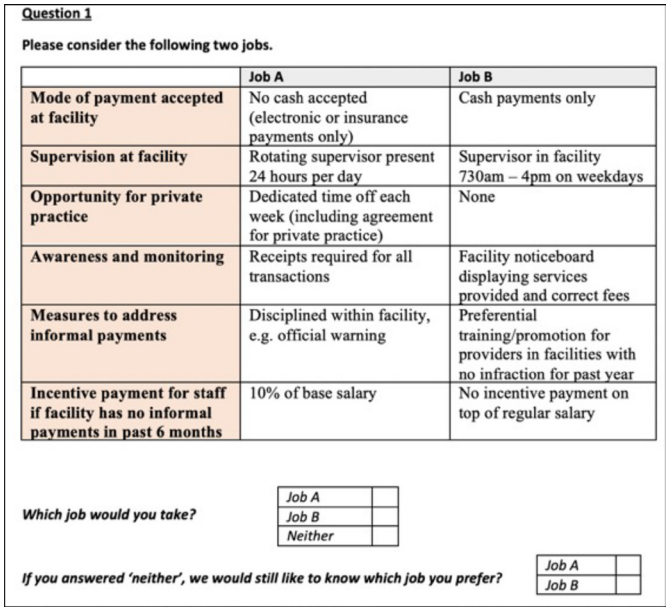
(improving transparency) (table 3). Other attributes were merged to reduce the overall number, for example, the provision of receipts and public awareness creation attributes were incorporated into the related concepts of awareness and monitoring. The attribute on formalising shifts at work was dropped as it was considered an unrealistic policy option. An attribute on enforcement measures to address informal payments was added, with three levels: disciplined at district level, disciplined at facility level and preferential training/promotion for providers in facilities with no infraction for the past year (table 3). These three levels tested our hypothesis that providers would accept 'negative' attributes if balanced by gains.

The last attribute on incentive payments to staff was retained but linked to an explicit goal that the facility would have no informal payments in the past 6 months (table 3). To ensure that the scenario is realistic, we limited the top-up incentive to basic salary not beyond 10%. Finally, this stage produced six attributes expected to tackle informal payments, each with several levels (table 3).

## Results from the pilot study (stage 5)

Prior to finalising the DCE tool, we tested the attributes and levels in table 3 in a pilot study among 15 health providers from 9 public health facilities. Twelve DCE choice sets for the pilot study were generated. We generated an unlabelled experiment with two hypothetical job alternatives (ie, job A and job B) and an opt-out option as no-choice alternative. Finally, we presented the 12 choice sets in a paper questionnaire, translated and eventually programmed into tablets. Figure 2 shows a sample of the DCE pilot choice set.

After the pilot study, we organised a feedback session with enumerators. They reported that some people took a long time to complete the DCE, in one case up to 1 hour, though most took between 10 and 30 min. Staff at


Question 1

Please consider the following two jobs.

| | Job A | Job B |
|---|---|---|
| Mode of payment accepted at facility | No cash accepted (electronic or insurance payments only) | Cash payments only |
| Supervision at facility | Rotating supervisor present 24 hours per day | Supervisor in facility 730am – 4pm on weekdays |
| Opportunity for private practice | Dedicated time off each week (including agreement for private practice) | None |
| Awareness and monitoring | Receipts required for all transactions | Facility noticeboard displaying services provided and correct fees |
| Measures to address informal payments | Disciplined within facility, e.g. official warning | Preferential training/promotion for providers in facilities with no infraction for past year |
| Incentive payment for staff if facility has no informal payments in past 6 months | 10% of base salary | No incentive payment on top of regular salary |

Which job would you take?

Job A ☐
Job B ☐
Neither ☐

If you answered 'neither', we would still like to know which job you prefer?

Job A ☐
Job B ☐

Figure 2 An example of a discrete choice experiment choice set for pilot study.

lower-level facilities, like dispensaries, who tend to have lower levels of formal education and are probably less experienced in answering surveys, found the DCE particularly challenging. Since our final study targeted health workers in higher level facilities (health centres and hospitals), this was not considered a major issue as these respondents in the pilot did not report a problem. The wording and numbers of the attributes and levels were deemed to be generally good; the questions being asked were understandable; and respondents appeared to be trading off between the different attributes/levels.

Quantitative data from the pilot study were analysed to estimate the main effects. The results were consistent with prior expectations, except for results on providing receipts (online supplemental table 1). Respondents strongly preferred choosing one of the jobs presented rather than neither option. Respondents preferred jobs with less supervision, where dual practice was allowed, receipts were issued, with a noticeboard, and where an incentive was paid to the providers working in facilities with no infractions. The other variables were not significant predictors of choice, perhaps due to the small sample size in the pilot. The attributes in the final DCE did not change and a new DCE questionnaire was developed following the same steps as those used to generate the pilot questionnaire but using the pilot results as the 'prior' estimates for each level. As with the pilot, the final survey had 12 unlabelled choice sets with an opt-out option with a follow-up forced choice question for respondents who opted-out of the initial choice.

## DISCUSSION

If Universal Health Coverage is to become a reality, governments must implement effective measures to reduce or eliminate all direct payments for healthcare, especially, informal payments. Yet solutions to the persisting problem of informal payments remain elusive. Since informal payments are often received by healthcare providers, often in private and without transparency, there is a need to understand their views on what is acceptable to them, and what might successfully discourage such demands. This can only be done by consent. DCEs have been used in other fields to identify views and preferences of public service providers and inform policy,[26 28 29 49] and we have conducted one to inform the development of feasible anti-corruption interventions in the Tanzanian context.[50] The method has not, however, been used widely in the existing anti-corruption literature yet, we believe, offers great promise.[34] However, the implications of a DCE for policy can be misleading if the experiment is poorly designed with inappropriate attributes and levels[31 32 51] and there are growing calls to improve reporting of the methods used to develop attributes in DCEs.[32]

We have systematically described the stages involved in developing attributes and levels in a DCE designed to elicit providers' incentives at the service delivery level, intended to design policy options to address informal payments in Tanzania.

There are certain challenges in undertaking a DCE in a poorly studied and sensitive field such as informal payments. We undertook a literature review and qualitative interviews, as in previous DCEs.[36 37 51–54] However, a literature review is only useful when there is sufficient relevant literature.[31] In our case, the literature on informal payments, especially in sub-Saharan Africa, was sparse.[14 55] Qualitative insights are also useful as they allow us to explore directly the views of the participants (eg, health providers) from whom preferences should be elicited, and can help to reduce the possibility of misspecification of attributes.[31] However, this depends on the sample being representative to the target group and the methods minimising bias from researchers. Thus, one should not rely exclusively on literature reviews and qualitative interviews.

For these reasons we conducted two workshops with stakeholders (health providers and managers) to achieve a consensus on DCE attributes. We have done this previously in Nigeria[22] and Bangladesh to capture the breadth of views and provide a forum for debate.[34] This increased our confidence about the policy relevance of our attributes. We are not aware of examples in the literature of the use of consensus-building workshops with those previously interviewed but we found it very useful to reach a shared position in the presence of uncertainty (eg, on the drivers of informal payments). A workshop allows diverse views to be expressed and contradictions and differences to be resolved in a way that is not possible with literature reviews or qualitative interviews.

Our study also incorporated a review by experts from a range of disciplines that sought to further elaborate the attributes based on a range of empirical and theoretical work. This allowed us to explore the inter-relationships among all the proposed attributes and levels, recognising that the actual experiment would involve trade-offs between the attributes. Their opinions played a critical role in shaping the attributes and levels, in particular the potential range of subgroup preferences. They drew on political settlements' theory, which emphasises the role of actors and their incentives in shaping service delivery.[56 57]

Although our pilot phase did not lead to changes in attributes and levels, perhaps reflecting the intense preparatory work already done, it did ensure that our wording was understandable and unambiguous.

Overall, our use of multiple methods enabled us to develop attributes and levels that were capable of answering the study questions.[31] We argue that those conducting a DCE should make use of various methods and document in detail the process by which they develop attributes.[31 51] This helps not only to understand context-specific issues but also ensures transparency and reproducibility.

Our approach had some limitations. First, the pilot study had a limited sample size due to challenges with recruitment in the study area in the time available and

the need to exclude those who would be recruited for the main study. Second, we could not find much literature on specific initiatives to tackle informal payments in Tanzania, reflecting its relative neglect by researchers so far. Nevertheless, our other methods such as workshops and qualitative interviews enhanced the data about relevant drivers of informal payment and potential initiatives to address it in Tanzania. Third, the interventions we included are the ones that have been discussed before and, while our findings show what aspects are most salient in the Tanzanian context, we recognise that there may be others that have not yet been proposed or have not been politically feasible. This becomes particularly important given the pace of technological developments, many with applications that could conceivably be applied to address this problem. Fourth, the process of developing attributes and levels of DCE relies on stated or suggested policies of the group represented in the DCE. However, DCEs can make an important contribution to development of an intervention, ensuring that its elements are aligned with the preferences of the group represented in the DCE but, of course, other aspects of feasibility, identified using other methods, must be considered too.

## CONCLUSION

We have documented and discussed systematically the five stages of developing six job attributes and associated levels for a DCE to elicit health providers' preferences in relation to measures to reduce informal payments in Tanzania. This adds to the limited methodological literature on development of DCE attributes, and particularly where one is seeking policy options that incentivise providers to alter their behaviours. We argue for transparency in reporting the processes of development and validation of DCE attributes and levels, especially in areas where there is scarce research.

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**Acknowledgements** We would like to thank all healthcare providers, health managers and all health stakeholders who participated or facilitated the planning, workshops and fieldwork for data collection. We also thank the whole ACE health research team at Ifakara Health Institute (IHI) and London School of Hygiene & Tropical Medicine (LSHTM). We acknowledge the support provided by Mary Ramesh and Khadija Kweka in qualitative data collection, planning for workshops and scoping literature review. We further acknowledge the support of the research team for data collection including data collectors and field coordinators.

**Contributors** PB conceptualised this substudy and wrote the first draft. PB and MMa coordinated the data collection activity. MMa, PB, AA and EH organised and facilitated the workshop. BA designed the 12 unlabelled choice sets and analysed the pilot data. PB and BA coordinated the opinions from experts. DB, MMc, EH, BA, AA and MMa together with PB involved in data interpretation, presentation and revision of the manuscript. DB is the guarantor of the overall content. All authors read and approved the final manuscript.

**Funding** This publication is an output of the Anti-Corruption Evidence (ACE) Research Consortium funded by UK Aid from the UK Government (Contract P07073).

**Disclaimer** The views presented in this publication are those of the author(s) and do not necessarily reflect the UK government's official policies or the views of ACE or other partner organisations. For more information on ACE visit www.ace.soas.ac.uk.

**Competing interests** None declared.

**Patient and public involvement** Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

**Patient consent for publication** Not applicable.

**Ethics approval** Ethical approval for the research project was obtained from the Institutional Review Board of the Ifakara Health Institute (IHI/IRB/No: 009-2018) and national clearance was obtained from the National Institute for Medical Research (NIMR/HQ/R.8a/Vol. IX/2812). All study participants were given an information sheet explaining the project and the voluntary nature of participation in the study and were asked to sign a written consent form before proceeding to interview. The information sheet and consent form were both reviewed and approved by the ethics committees prior to the research. Participants gave informed consent to participate in the study before taking part.

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Data availability statement** Data are available upon reasonable request. To gain access, data requesters will need to sign a data access agreement and to confirm that data will only be used for the agreed purpose for which access was granted.



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**Appendix Table 1: Main effects from pilot data multinomial logit (MNL) estimation**

| Job attributes/ levels | Model 1: Unforced MNL | Model 2: Forced choice MNL |
|---|---|---|
| | Coefficient | Coefficient |
| **Mode of payment** | | |
| No cash accepted (electronic or insurance payments only) | –0.09 | –0.07 |
| Cash only (reference) | | |
| **Supervision at the facility level** | | |
| Rotating supervisor present 24 hours per day | –0.19*** | –0.21** |
| Supervisor in facility 730am – 4pm on weekdays (reference) | | |
| **Opportunity for private practice** | | |
| Dedicated time off each week (including agreement for private practice) | 0.22*** | 0.22** |
| None (reference) | | |
| **Awareness and monitoring** | | |
| Receipts required for all transactions | 0.43*** | 0.41** |
| Facility noticeboard displaying services provided and correct fees | 0.22* | 0.21 |
| Hotline to anonymously report informal payments to health manager or board | –0.15 | –0.16 |
| None (reference) | | |
| **Measures to address informal payment** | | |
| Preferential training/promotion for providers in facilities with no infraction for past year | 0.044 | –0.006 |
| Disciplined at district level, e.g., warning letter that reduces opportunity for promotion | 0.06 | 0.08 |
| Disciplined within facility, e.g., official warning (reference) | | |
| **Incentive payment for salary top-up (Continuous at 5% interval)** | 0.04962*** | 0.049** |
| Constant for choosing a job presented rather than neither | 1.72*** | |
| Constant for left-right bias (preference for job A) | | 0.1 |
| Number of respondents | 15 | 15 |

Notes: *** denotes significance at 1%, ** at 5%, and * at 10% level

# Interview guide

**Aim: Improving the functioning of the primary health care system by addressing the challenges posed by absenteeism, informal payments and vulnerabilities of the performance-based financing system**

**Specific objectives**

a) To establish the informal network(s), through which informal payments are extracted and through which formal and informal absenteeism is organised/ enabled/ facilitated and the types and/or position of actors that enable these.

b) To explore if and how absenteeism/informal payments are induced by incentives, and related to specific district management and accountability structures and practices (especially salary payments and payments of overtime, entitlements, supervision)

c) To explore if and how RBF/P4P implementation changes the incentive structure effectively, is vulnerable to manipulations, and is affected by informal connections/networks (or vice versa – explore if and how informal connections/networks are shaped by the RBF/P4P initiative)

d) To explore the potential of RBF/P4P in facilitating (i.e. by creating incentives) or curbing (by creating disincentives) the practice of provider absenteeism and informal payments, and any other rule bending practices.

## Interview guide for health providers and Council Health Management Teams

***[Interviewer(s) to introduce themselves, purpose of this visit and to get informed consent before proceeding with interview]***

Thank you very much for accepting to participate in this interview. Since 2000 to date there have been a lot of systems strengthening initiatives in Tanzania. Some focused on expanding coverage of health services especially the primary health care and some aimed at improving performance. All these are done to ensure that every Tanzanian access quality health services. There has been remarkable improvement in service delivery since that time. Also, there are several health systems challenges that need to be addressed. These include: shortage of human resources for health, shortage of health commodities, poor infrastructure especially the primary care infrastructure. Another challenge is related to clients' discontentment with regard to health providers' practices such as absenteeism and informal payment. In addition, some of the performance improvement mechanisms are seen vulnerable to informal connections and networks. Our interest in this study is to understand the providers perspectives on **absenteeism, informal payments and vulnerabilities of the performance-based financing system in terms** of - what drives these informalities, existence of informal networks leading to these informalities and how they could be addressed incrementally

| **Part One: Facility Information** | |
|---|---|
| Facility level | **Tick Appropriate**<br>District Hospital [ 01 ]<br>Health Centre [ 02 ]<br>Dispensary [03]<br>Facility's Star rating status<br>Zero star [01]<br>One star [02]<br>Two star [03]<br>Three stars [04]<br>four and above [ 05 ] |
| ***Date of interview*** | |
| Part 2: Information about respondent | |
| 1. Gender | Tick appropriate<br>Male<br>Female |
| 2. What is your age? | Age in years |
| 3. When did you start working in this facility? | |
| 4. What is your current technical qualification? | Medical Officer [01]<br>Assistant Medical Officer [ 02 ]<br>Clinical Officer [.03]<br>Registered Nurrse [04]<br>Enrolled Nurse [05]<br>Other (specify) [88] |
| 5. How long have you been in this position? | Mention in months |
| 6. Can you tell me about your roles in this health facility?<br>7. What challenges do you face in your roles as the health worker in this facility?<br>Probe:<br>General delivery of health services<br>(Ask about: supervision, medicine availability and health worker availability, employee welfare) | |
| **Part 3: Absenteeism and Informal Payments**<br>**Opening statement**<br>Tanzania's health sector has a severe shortage of staff (54% shortage). We also know that absenteeism and informal payments are problems for the health system but what we don't know is what it is that pushes some health workers into being absent and how to provide support or make changes so more health workers are in their health facilities more of the time. Our first set of questions is about absenteeism and so we would like to talk to you about that in your health centre, then we will proceed with informal payments. We are not here to judge you or your co-workers but really want as much information about how absenteeism works so that we can devise policies that helps health workers to be more present more of the time. | |
| ~~Let us start to talk about Absenteeism~~ | |

8. Thinking about your experience as a health worker, how common is it for health workers to be away from their posts during the working day?
9. Can you describe different forms of absenteeism that you have observed or heard about during your career – which of these are most frequent? Which of these are most problematic for the health workers and patients in the facilities?
10. What types of absenteeism exist in this facility
11. What do you think causes or drives these different forms of absenteeism- (probe for how different factors lead to absenteeism- some of documented factors) **[get full stories – a health worker in that facility was absent or involved in informal payments recently... how and why did this happen ...perceptions...consequences] Personal factors- Health, family problems attitude to work, relationship with co-workers or supervisors Workplace factors-, weak oversight, nature of work, management attitude, HR policies, leave facilities, fringed benefits, running private practice]**
    Environmental – distance from work, climate,
    Economic factors- Subsidiary income
12. How easy is it for health workers to be away from their posts in this or another health centre that you have worked in? Do their friends give them support? Why is that?
13. In your experience, which health workers are more often absent than others? Can you provide an example? Why is that?
14. in your experience do you think the practice of absenteeism has changed in the last couple of years? How has it changed? Why has it changed?
15. In what way has RBF or any other interventions influenced health workers in this facility? Has it meant that some health workers are more often present at work? Which health workers are now more present at work? Are there some health workers that it has not influenced? Why is that?
16. What are the effects of absenteeism in this facility? Probe the effects - how and who is affected – who benefits?
17. In different countries there have been different models to address absenteeism and that is difficult because there are different reasons why these things can happen and sometimes absenteeism is an informal practice that emerge to cope with a challenging environment. At this point, we would like to know
    a. is the formal policy in relation to absenteeism, what are the regulations in case a health worker is absent and what actually happens? Can you describe any interventions that you know of that have addressed absenteeism?
    b. What are their strengths and limitations?
    c. how people could be incentivized in spending more time at the hospital/health facility.
18. Do you have anything else to talk about absenteeism in relation to the discussion that we have just had

Now let us talk about informal payments

19. What do you understand by informal payments – probe for examples to test if the respondent understands it
20. What are the different reasons that a member of staff would take an informal pay? – here probe to see if informal payments are sometimes offered when the member of staff does not want to take them.
21. What types of informal payment is/are in practice? Probe for
    - In cash or in kind?
    - Private consultations within the public facilities?
    - Impetus of provider or of user (for future good will, or other reasons)?
22. What drives these different forms of IP? [get full stories – a health worker in that facility was absent or involved in informal payments recently... how and why did this happen ...perceptions...consequences]
23. In this section also. we are interested with the informal networks enabling informal payment practices- could you please explain
    - the environment in which it happens
    - which units are more likely to engage and why
    - which units are not likely to engage and why
    - why these actors connect

24. What is the formal policy in relation to IPs, what are the regulations in cases where these are disclosed, what actually happens? Do you have/ or have you (or your facility) ever implemented interventions to address informal payments? What are these?
25. What are the strengths and limitations of the interventions in place?
26. What are your recommendations for further improvement?
27. In your experience do you think the practice has changed in the last couple of years? How has it changed? Why has it changed?
28. In what way has RBF influenced health workers in this facility? Has it meant that some health workers are less likely to take informal payments? Which health workers are now less likely to take informal payments? Are there some health workers that it has not influenced? Why is that?
29. Some people might want to go to health facility in certain time or cannot go in other time, what would be your opinion if the proposal is made to formalize informal payments --like opening the clinic longer time and making clients who come beyond the official clinic hours pay certain amount for such service- [probe for reasons]
30. Do you have anything else to talk about informal payment in relation to the discussion that we have just had

Part 3: Performance Improvement Initiatives:

RBF aims to motivate health workers for improved delivery of RMNCH by supplementing money to performing health facilities (i.e. can be used to meet immediate facility needs), as well as some topping up of salaries of HWs based on their performance.

31. What happens under the RBF arrangement in the facility
32. What has been the positive and negative impact (probe for examples) of RBF in your facility-
33. Which bases were/are used to divide bonus payout?
    a. Does your facility use attendance point when distributing RBF bonus payout? [**interviewers note: RBF design uses Attendance point + Responsibility point to divide the 25% bonus payout to staff]**
34. Are data verified before payment? How often? By who?
35. Are monitoring and supervision done? By who? How often? What does it involve? [briefly explore the content of monitoring and supervision]
36. Do RBF payment include penalties for error in data reporting?
37. Has your facility encountered any penalty? How many times? What was the error?
38. Is it possible to over report the performance data for higher RBF payout? If yes how? If no why? [**interviewers note: "intentional" over reporting is also a sign of gaming the system]**
39. Are there services which you focus much than others? If yes, how and why? If no, why? [**Interviewers note: focusing resources {facility finances, HR, time, supervision} on specific services is also a sign of gaming – Q39 above is trying to elicit similar information in different way**]
40. Do you think some patients contribute much more to RBF payouts compared to others? If yes, how and why? If no, why? [interviewers: probe to find out if rich and educated patients contribute much more to RBF payouts than the marginalised]
41. Does this facility care more about rich and educated [the better off} patients? How?

**Interview guide on Informal payments**

Focus: Senior administrators, Head of institution (Hospitals)- retired RMOs, Head of departments in busy hospitals and experienced RMOs and DMOs- (Maximum 5 KII)

**Would like to gather your experience on how as leader you have been managing revenue leakages in your institution**

1. As a professor/administrator/ doctor in charge/ Head of unit who held the leadership position for several years - Please tell me about your experience in addressing revenue leakages in your facility?
2. In your experience where do leakages occur and why?
3. How do specific individual engage in IP?
4. What kinds of connections exist between providers?
5. Which cadres and units are likely to engage and why?
6. Which cadres and units are less likely to be involved in IP practices? And why do you think so
7. Which type of informal practices exists in the health sector and who is involved?
8. How much on average would the informal network members or individual earn as IP?
9. How much loss have you been encountering due to these leakages
10. What interventions have set to address the challenge
11. Tell me about the processes you took to initiate the interventions to address the challenge- What was easy and what was difficult
12. Is it easy or difficult to break the informal networks- tell me more about your experiences in trying to break the chains
13. Are there any behaviour that manifest to prohibit the change of the system? Does this create new coalition to fail the changes-
14. How did you counteract the influence of the emerging coalition against the changes introduced

Now I would like to get your opinion regarding the general experience of IP within the health care system

15. Are there some facilities where informal payments are more common than others? Where are they most common, least common? (are they common in larger facilities and less common in dispensaries, urban vs rural)
16. Are there some departments in larger facilities where informal payments are more common? Which are these and why?
17. We know that informal payments are sometimes extracted through networks of actors as discussed earlier
    a. In which types of facilities do these networks operate mostly (hospitals, health centres, dispensaries?

       In the larger facilities are informal payments extracted through networks common across different departments? Which departments do they happen in most commonly and when do these happen commonly – at night, during the day? Which actors are involved (Dr, nurses, midwives, clinical officers)? Which actors benefit most from these (i.e. do people share the proceeds equally or do some cadres make more money than others)? Are any of these actors in charge of the network (i.e. more powerful). Are there any actors in these settings who are excluded from being involved in these networks (more junior staff, newcomers, particular cadres of workers)? Why are they excluded/ not involved?
    b. What are the successful ways in which networks extracting payments have been stopped? Do you have other ideas of an intervention that might work?
18. Sometimes informal payments are just organised by an individual.
    a. In which settings do individuals extract payments alone? (Larger, smaller, dispensaries)? In the larger facilities are informal payments extracted by individuals common across different departments? Which departments are they

most common and when do these happen commonly- at night, during the day? Which actors are involved (Dr, nurses, midwives, clinical officers)? Are there particular cadres that commonly don't take informal payments? Which are these and why?

19. Where are the successful ways in which individuals extracting payments have been stopped? Do you have any other ideas of an intervention that might work? We know that the electronic payment system in one way or the other can help to reduce IP, what are your opinions about this? Do you think that this system can be maneuverer to enhance IP practices?
20. Are there any formal policies in relation to IP or bribes?