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Article in *Journal of Multidisciplinary Healthcare* · February 2024

DOI: 10.2147/JMDH.S451533

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# Barriers and Facilitators to Screening for Kidney Disease Among Older Adults with Hypertension and Diabetes in Mbarara Southwestern Uganda: Healthcare Providers' Perspective

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**Background:** Screening for kidney disease (KD) among high-risk patients (patients with hypertension or diabetes) allows early diagnosis, intervention and delayed progression of the disease. In low- and middle-income countries (LMIC), KD screening is still sub-optimal. This study explored the healthcare providers' perceived barriers and facilitators to KD screening among older adults with hypertension and diabetes in Mbarara southwestern Uganda.

**Methods:** This was a descriptive qualitative study among healthcare providers caring for older adults with diabetes mellitus and hypertension at Mbarara Regional Referral Hospital (MRRH) in southwestern Uganda. In-depth interviews were conducted using a semi-structured interview guide. Interviews were audio-recorded, transcribed verbatim, and thematically analyzed to develop themes of barriers and facilitators.

**Results:** We conducted 30 in-depth interviews among healthcare providers. Barriers to screening for kidney disease included patient related factors according to healthcare providers (financial hardships, poor health seeking behavior, limited knowledge and awareness), healthcare factors (work overload, ineffective patient healthcare provider communication) and system/policy related factors (lack of laboratory supplies, lack of guidelines and poor medical record keeping and documentation). With respect to facilitators, we found formation of peer support groups, effective team, and continuous medical education (CME).

**Conclusion:** Healthcare providers encounter substantial but modifiable barriers in screening older adults for KD. The identification of barriers and facilitators in timely KD detection gives us an outlook of the problem in Uganda and leads for proposals of action. Interventions that address these barriers and promote facilitators may improve the healthcare provider's effectiveness and capacity to care including screening for patients at risk of KD.

**Keywords:** healthcare providers, barriers, facilitators, screening, kidney disease, hypertension, diabetes, older, adults

## Introduction

Kidney disease is the 10<sup>th</sup> leading cause of death globally and projections show that chronic kidney disease (KD) will become the 5<sup>th</sup> leading cause of death by the year 2040.<sup>1</sup> KD is increasing in incidence and prevalence worldwide and is estimated to be between 13.4% and 14.3% accounting for approximately 1.2 million deaths per year.<sup>2</sup> Co-morbidity of diabetes mellitus and hypertension dramatically increases the risk of developing kidney disease.

KD has now emerged as a significant public health challenge in sub-Saharan Africa with a reported prevalence of 13.9%.<sup>3</sup> The prevalence of KD in Mbarara has been shown to be 15.3% in a study done at MRRH.<sup>4</sup> As a non-communicable disease, KD has not received the necessary attention in most countries in sub-Saharan Africa including Uganda.<sup>5</sup> KD is associated with increasing morbidity and mortality and also known to impact negatively on quality of

life.<sup>6</sup> The magnitude of mortality among this age group is about 59% (Anecdotal records of renal unit MRRH, 2022). Progression of KD to end-stage kidney disease (ESKD) is an important burden to the healthcare system in most low middle income countries (LMICs) as most patients cannot afford renal replacement therapy.

Prevention, early detection, and intervention may prevent onset of KD and reduce the likelihood of KD progression to end-stage renal disease (ESRD).<sup>7</sup> ESRD requires advanced and expensive renal replacement therapies like dialysis or kidney transplant for treatment. These treatment modalities are not readily available in developing countries or even where they are available, their cost pose an immense financial burden on patients and their families.<sup>8</sup> In 2010, global estimates showed that over half of people requiring renal replacement therapies died due to lack of access to dialysis or kidney transplant.<sup>9</sup> This highlights the extent of the health and socioeconomic challenges arising from KD and its undetected progress to ESRD.

To address these challenges, screening for KD has been recommended as a priority intervention for early detection and subsequent prevention KD progressing to ESRD.<sup>4</sup> Screening for KD should not be universal but should be performed in individuals at an increased risk of developing KD.<sup>10</sup> Deliberate efforts for screening for KD should be directed towards high-risk population of older patients with HTN and DM.<sup>11</sup> According to the Uganda clinical guidelines, high-risk patients with HTN and DM should be screened for KD at least once a year.<sup>12</sup> However, there is no defined detection program for KD in Uganda. This generates deficiencies in the provision alternative therapies like renal replacement therapies (RRT) and an inequitable offering of healthcare services. Previous studies have been carried out for other chronic diseases where barriers and facilitators have been identified with respect to the provision of services and the knowledge of healthcare providers. Such studies have paved way for possible timely detection programs to exist and improve, like in the case of breast cancer and cervicouterine cancer, Human Immunodeficiency Virus among others at a national level. In this study, we aimed at exploring the barriers and facilitators for screening for KD among older adults with hypertension and diabetes, from the perspective of healthcare providers at Mbarara Regional Referral Hospital (MRRH) in southwestern Uganda.

## Methods

### Study Design and Setting

We conducted a qualitative exploratory study using in-depth interviews to describe individual perspectives of healthcare providers in their routine clinical care setting. Our aim was to identify barriers and facilitators to screening for kidney disease among older adults with hypertension or diabetes by healthcare providers in the department of Internal Medicine of MRRH. The study was designed by JO, in consultation with GZR, AC, and RM. MRRH is a public referral health facility and the teaching hospital of the Medical School of Mbarara University of Science and Technology (MUST). The hospital serves a population of over four million people in its catchment area. MRRH is located 270 Km from Kampala, the Capital City of Uganda.

### Study Participants

The study participants included medical doctors (both consultant physicians and residents), and clinical officers who were involved in screening and managing older people with diabetes mellitus (DM) and hypertension (HTN).

### Participant Recruitment

Participants were recruited from December 2022 to January 2023. Potential participants were approached and assessed for eligibility (having been involved in screening and care for older adults with DM or HTN for at least one year). Participants were recruited either in person or by telephone call, where an appointment was fixed of when to conduct an interview by JO. If the eligible participant agreed to participate, written consent was obtained. Participants were recruited until saturation point. Saturation point was achieved at the 30<sup>th</sup> participant.

### Data Collection

A semi-structured interview guide was used to identify facilitators and barriers to kidney disease screening among older adults with diabetes mellitus and/or hypertension by healthcare providers. Guiding questions were developed by the study team (including a nephrologist, medicine physician and qualitative research specialists) based on the study's aims and the previous literature on this topic.

The interview guide was pretested with the first five participants of this study, and these were included in the results. The interview guide was not modified after pretest apart from rephrasing the questions. The interviews took place at the respective offices of participants with only the interviewer and participant present. Each interview lasted between 30 and 45 min. All interviews were conducted face to face in English by JO who was trained in conducting in-depth interviews for qualitative research. No interviews were repeated. Written informed consent was obtained before each interview.

## Data Analysis

Interviews were audio recorded and transcribed verbatim by an independent transcriber (FN). Transcripts were checked by (JO) to ensure no useful information was lost during transcription. Data were analyzed using inductive and deductive approaches. Transcripts and field notes taken from the interview were carefully read and coded independently by JO and PM. An initial coding scheme was created using line-by-line analysis and constant comparison. After coding all the transcripts, similar codes were grouped together and rearranged on consensus between JO and PM. There was an iterative process during the process of data coding to reach a consensus about which responses were to be barriers or facilitators to kidney disease screening among older adults with diabetes or hypertension.

## Results

In this study, we interviewed 30 healthcare providers with an average age of 36.5 years and an average working experience of 8.6 years (Table 1).

Three themes of barriers and facilitators of screening for KD emerged from data throughout the analysis process as shown in Table 2 below:

### Theme 1: Patient Related Factors Barriers to Screening of KD

#### Financial Hardships

In this study, most participants described various aspects of financial hardships which impede screening for KD. Participants noted that lack of money to pay for tests done in screening for KD was the major challenge. Some participants added that most patients who at risk for KD live in rural and cannot afford transport fares to go to health facilities where KD screening is carried out.

**Table 1** Participant Demographic Characteristics

Characteristic	Number (%) (N=30)
<b>Mean age</b>	36.5
<b>Sex</b>	
Male	26(87)
Female	4(13)
<b>Working experience (Average=8.6)</b>	
<5 years	9(30)
5–10 years	8(26)
>10 years	13(43)
<b>Education level</b>	
Diploma	1(3)
Bachelor's degree	10(33)
Master's degree	19(63)
<b>Categories</b>	
Residents	15(50)
Physicians	10(33)
Clinical officers	05(17)

**Table 2** Barriers and Facilitators of Screening for KD

Themes	Sub-Themes
<b>Patient related factors</b>	<b>Barriers</b>
<b>Healthcare provider related factors</b>	Financial hardships Poor health seeking behavior and hopelessness Limited knowledge about KD screening <b>Barriers</b> Work overload Ineffective patient-healthcare provider communication <b>Facilitators</b> Peer support groups Multi-disciplinary cooperation
<b>System/policy related factors</b>	<b>Barriers</b> Lack of guidelines for KD screening Long turnaround time for the results Lack of supplies like laboratory reagents Poor record keeping and documentation processes <b>Facilitators</b> Routine continuous medical education (CME) Cost exemption on kidney disease tests

The patient tells you they don't have money and even what the ministry provides isn't available, it may be out of stock. There and then the only option is if there is a Samaritan willing to give money which isn't sustainable or patient looks for money somewhere. So as a practitioner, what we do is to educate them about the importance of the tests and leave it in the hands of the patient and the system. My hands are tied and I cannot go beyond because of barriers. (M, 37 years)

Due to such economic limitations, one participant expressed that patients could not do the required tests in time resulting in delayed treatment.

... many patients are not able to do these tests in time and it frustrates me as a doctor because I cannot investigate my patient as early as I may need. It causes delays in treatment. It's also not good for the patient because they cannot get treatment in time. (M, 37 years)

One healthcare provider expressed a concern that, however, much they sometimes pick money from their own pockets to support patients do screening tests, they cannot do it consistently for all financially incapacitated patients.

Then also the truth is that the patients that don't even have the finances. They have all the symptoms but they have totally nothing. I don't think we can keep picking money from our pockets every time to support like maybe you have a poor patient fund, we try to support these patients to do kidney function tests maybe.... (M, 36 years)

## Poor Health Seeking Behavior and Hopelessness

Most participants in our study noted that poor health seeking behavior of patients hinders screening for kidney disease. Participants described that patients only go to the hospital when they have developed symptoms.

The biggest challenges we have is that the health seeking behaviors of our communities is always not very good. They come to hospital when diseases have progressed far. (M, 30 years)

Our health seeking behavior of our patients is very poor. Someone will never know they have hypertension or even if they know they are not adhering to drugs and the more you fail to control then the more you are at risk of kidney disease as an outcome. (M, 37 years)

Some participants clearly stated that most patients only go to hospital when they develop symptoms. In connection to that, some participants mentioned that feelings of hopelessness due to deteriorating health prevent patients and their care givers from using the limited financial resources for screening KD. This therefore makes it hard for healthcare providers to screen, diagnose and treat KD in early stages.

Sometimes, some of these patients come very late, they come very late that even if you going to screen to know, there is nothing much you can do... (M, 36 years)

Another participant highlighted that besides the cost implications of screening for KD, patients think that having KD means they are going to die, thus fearing to do the screening.

So I feel that patients fear to check because there is a cost implication, secondly, they think that if they check and found they have the disease, it's like condemning them to death. (M, 30 years)

## Limited Knowledge About KD Screening

Some participants also pointed out that healthcare providers lack sufficient knowledge about chronic conditions like hypertension and diabetes mellitus which predispose patients to kidney disease. This was particularly reported to be among healthcare providers in lower health centers who cannot identify and refer patient with high risk of kidney disease to higher health facilities for screening.

Some people don't know the importance of relationship between these two conditions. Hypertension, diabetes and kidney disease because I have seen challenges of where many people want to relate kidney diseases with only conditions coming from down downstream, sexually transmitted diseases urinary tract infections going upstream...The lack of knowledge and lack of sensitization. (M, 36 years)

Another participant revealed that at times patients mention some symptoms which would make screening for KD a priority, but unfortunately, these symptoms are overlooked by healthcare providers.

The other factor is knowledge gap. Some of us don't know that KD is a problem so we are not serious when it comes to screening and asking patients questions. At times patients report symptoms and we overlook them. (M, 28 years)

One participant noted that they think screening for kidney disease is less important. He attributed this to lack of experience in management of kidney disease and thus not knowing the magnitude of the problem.

Generally speaking, there are also doctors who don't know that it's important to screen for kidney disease and that is why they don't do it because probably in their experience kidney disease is not their problem but for me who screens kidney diseases on a weekly basis, I know how big a problem is. (M,30 years)

Another participant specifically pointed out that lower cadre healthcare providers at lower level of the healthcare facilities were not well vast with knowledge about kidney disease. These healthcare providers could not detect it early and send patients at high risk for KD for screening.

...As for me who has had some community experience in the lower health centers, most doctors don't know when to screen and even most clinicians they don't know when to screen a patient for kidney disease.... (M, 30 years)

## Healthcare Provider Factors

### Ineffective Patient-Healthcare Provider Communication

Some participants discussed that patients and their caregivers are not given sufficient information to guide their decision to do screening for KD. One participant is explained that some patients end up not screening for KD because they do not know its relevancy. He added that this commonly happens when patient and the healthcare provider cannot speak the same language. As a result, the patient gets inadequate information about screening for KD.

...this is a multi-linguistic country. There are people who do not understand the language of the patient presentation. So just the language alone you're not able to listen from that patient so maybe you only relying on the laboratory results and of which some patients cannot give you. (F, 59 years)

... there is not much time to explain actually why diabetes causes kidney disease and why it should be checked early. (M, 30 years)

Another participant put it that there is less patient-healthcare provider contact time resulting from understaffing and large patient numbers which is not sufficient for the patient to get full package information about screening for KD.

Another challenge I had forgotten is patient doctor ratio. A doctor has to see 60 patients in three hours so the time to ask those questions isn't there. I have been in the DM clinic and even the doctor doesn't ask how the patient is, just writes drugs and says go to the window for medication because patients are many. (M, 31 years)

## Work Overload

Overwhelming workload was recurrent mentioned by most participants as a significant barrier to KD screening. This was to a larger extent attributed to inadequate staffing levels and overwhelming numbers of patients to a less extent. Understaffing in laboratory department was reported to be a major setback of KD screening time due to very high turnaround time for results.

If I use the outpatient clinic I run, the turnaround time of results. A patient may come from very far to get care here and are sent to the laboratory and by the time they come back the clinic has closed so patients get disappointed and don't show up. (M, 37 years)

Participants explained that delay of results from the laboratory for patients to make extra visits to the hospital thus incurring more costs. In addition, some participant said when results delay, it denies the attending physicians' chance to make timely decisions about further management of the patient.

I think to me personally it is a lot of workload, you may prioritize screening for the first 50 patients after that, you realize that maybe you know even if I send you for what you won't be able to do it...

At times they [laboratory technicians] are overwhelmed by other tests so running those function tests become inconveniencing and they start referring them to other labs, those that can afford pay and those that cannot fail to do the tests. (M, 50 years)

## System/Policy Related Factors

### Lack of Laboratory Supplies

Besides lack of enough laboratory staff, many participants revealed that hospital laboratories frequently run out of supplies. The participants added that this forces the poor patients to go to private laboratories in town where the pay extorting prices for tests.

There are times we lack the, materials to carry out tests. No cartilages in some instances they are out of stock and the laboratory cannot do it. When the people are sent in town, it's very expensive and some of them cannot handle the costs. (M,44 years)

### Lack of Guidelines

Many participants stated that they lack guidelines which would direct them on who meets the criteria for KD screening, when it should be done and how often it should be done. Some participants explained that they rely entirely on their clinical judgment to decide for which patient they should do KD screening.

I have not seen any protocol written anywhere that says that the patients who have come with kidney disease, they have to be seen by this... We don't have like that protocol that says okay, this is supposed to be this person to be supposed to be responsible for this for this. (M, 36 years)

One healthcare provider indicated that even the guidelines which are available in some health facilities are not followed because they are far-fetched and fit for high income countries where they were developed from.

...but you realize that most of the guidelines that have been made were made from high income countries and sometimes we don't follow them because they are a bit far-fetched. (M, 30 years)

Similarly, another participant narrated that there is no deliberate effort to make sure that HTN and DM patients are periodically screened for KD. This therefore makes healthcare providers to consider screening for KD at will or when the patient's condition critically makes it necessary.

I think there is no like a deliberate effort..., there is no deliberate effort to ensure that renal disease screening is emphasized among the healthcare providers and the team. It is individual initiative... (M, 35 years)

## Poor Medical Record Keeping and Documentation Processes

Healthcare providers highlighted that there is no clear documentation of tests and treatment given to the patient. This makes it difficult for attending healthcare provider on a subsequent visit to tell whether the patient was screened for KD or not during the previous visit. Another participant added that even the books and papers the patients have for documents easily get torn or lost leaving healthcare providers without baseline information about the patients' KD screening status.

The biggest is how we record screening itself, because if I don't capture and I have screened then I may not be able to know when the next screening is. Then the patients have no proper gadget for documentation, we use books and at times these get lost or papers get torn so one thinks they screened a particular patient when they didn't. (M, 35 years)

## Facilitators to KD Screening

### Healthcare Provider Related Factors

#### Peer Support Groups

Healthcare providers reported having tried to devise means of supporting patients with financial assistance through contributing funds in patient peer support groups. One participant explained that even healthcare providers also contribute some money for those patients who really need the tests but cannot afford to pay for them. Similarly, some poor patients receive cost exemption on kidney disease tests. Some participant mentioned that for those patients who cannot afford the kidney screening tests at all, they write a letter to hospital director who then authorizes the tests to be done for free.

Sometimes some staff contribute for patients who really need that test, sometimes we write an exemption letter and we send it down to the director's office and sometimes he tries to find a way that patient can be helped. So really by the time we give up we know that we have tried all areas. (M, 28 years)

Participants explained that through these peer support groups, patients mobilize fund to buy drugs or pay for investigations in large quantities which is cheaper than buying on individual basis.

However, in the hospital because of supplies not being there all the time, the patients formed an association where they contribute some money so that when it is time for refill, their drugs are already there but it doesn't cover everyone. (M, 50 years)

## Multi-Disciplinary Cooperation

Effective team work between healthcare professionals (doctors, nurses and counselors) was reported to facilitate easy identification of high-risk patients who need KD. Participants revealed that there were healthcare providers with various level of expertise which made it easy for the juniors to consult about screening a patient for KD whenever necessary.

I have people that I depend on, the ones that I ask like SHOs, and seniors. So, the support I need is having people that I can ask, because you have the healthcare providers, you have doctors who can easily get to know the high-risk patients; this is old, this is diabetic, this is hypertensive, most likely they are having some renal insults. So, the intern doctor, the medical specialist knows this patient needs to have this and this done... (F, 44 years)



## System /Policy Related Factors Routine Continuous Medical Education (CME)

However, much knowledge gap was noted to be a barrier, healthcare providers reported that they were having CME sessions which increased their knowledge about screening for KD and its relevancy to HTN and Dm patients.

As Mbarara Regional referral one is CMEs for the clinicians to remind and encourage them not to forget the questions and to screen for these CKD in at risk patients. (M, 31 years)

Another healthcare provider added that training staff through refresher courses was crucial for effective performance of their work.

There are those that need training, refresher courses can also work and staff are taken through kidney screening processes, when to screen, how to manage, when to refer. Those would quickly make clinicians alert to do the work, much as one is experienced. (M, 50 years)

## Discussion

This study explored the barriers and facilitators for screening for KD among older adults with hypertension and diabetes in Mbarara southwestern Uganda. The most recurrently reported barriers included financial hardships, poor health seeking behavior, limited knowledge and awareness, work overload, lack of laboratory supplies, lack of guidelines, and poor medical record keeping and documentation. Screening for KD was facilitated by formation of peer support groups, multi-disciplinary cooperation of healthcare providers and CMEs on KD.

### Barriers of screening for kidney disease

We found out that financial hardship was a significant barrier of screening for KD. Given the low economic status of most patients receiving care at the facility, most of them could not afford to pay for the tests or even pay transport for periodic visits to the hospital for KD screening. As a result of this, KD progressed to later stages without being diagnosed resulting into even higher costs of treatment options like dialysis. Consistently, financial burden as a barrier to screening for KD has been previously reported even in high income countries.<sup>13</sup> In developing countries, studies have shown that Kidney Foundation's Kidney Disease Outcomes Quality Initiative (KDOQI) KD guidelines pose a considerable financial challenge highlighting that implementation of screening programs is costly.<sup>14</sup> To address this, KD screening program sought to apply cost-effective approaches applicable to socio-economic status of the target population.<sup>15,16</sup> Screening for KD offers benefits which outweigh the cost as it allows early treatment, thus decreasing disease progression and mortality.<sup>17</sup>

Our study revealed that poor health seeking behaviors of patients kept the efforts of screening for KD lagging behind the target, because KD's natural history is progressive without serious symptoms.<sup>18</sup> Most patients only seek healthcare services when they have already developed severe symptoms. A previous study in Uganda pointed out that patients' delay to seek healthcare was due to absence of symptoms.<sup>19</sup> Health seeking from healthcare centers has been shown to be considered as the last resort.<sup>20</sup> Hesitance to seek healthcare is often due to concerns about costs, lack of awareness, misconceptions or lack of trust in the healthcare system.<sup>21</sup> Low rates of KD awareness have been reported to increase the number of people progressing from KD to end-stage renal disease (ESRD).<sup>22</sup>

We found out that hospital laboratory lacked supplies necessary to carry out investigations to screen for KD, making KD screening unavailable to patients. This has been shown to be a common problem in low- and middle-income countries, hence validated KD risk models have been suggested as an alternative to identify high risk patients where laboratory investigations are not available.<sup>22</sup>

This study revealed that work overload, especially in laboratories compounded by low staffing levels, leads to increased turnaround time for KD screening results. This in turn frustrates the patients, and they end up abandoning their test results and going back home without knowing their KD status. Consistent with our findings, a study in Mexico showed that overload of healthcare services and insufficient human resource were key barriers to timely detection of KD<sup>23</sup> Similarly, a heavy workload on healthcare providers has been documented as a barrier in KD care.<sup>24</sup> When work is too much compared to the human resource, some services like screening are never prioritized, compared to treatment

services. This in turn affects the patients, who return when they are in advanced stage of the disease that even requires more resources to manage.

We found out that ineffective patient-healthcare provider communication hinders deciding to screening for KD. There are low awareness rates of KD among healthcare providers of low socio-economic class<sup>24</sup> In our findings, this was exacerbated by communication gap resulting mainly from little patient-healthcare provider contact-time and language barrier. These results in the patient receiving insufficient information about screening for KD and its relevancy. Similarly, previous studies have described such communication as short and full of jargons.<sup>16</sup> Limited awareness and poor understanding of KD affects self-management behaviors resulting in un desired health implications.<sup>25</sup> The use of culturally sensitive and enhanced communication strategies should be embraced to improve KD screening.<sup>26</sup> Furthermore, researchers have suggested use of plain language and easily comprehensible written information to improve health literacy among patients at risk for KD.<sup>27</sup>

The KDOQI has set guidelines for screening all patients with risk factors like, DM, HTN, systemic illnesses, age greater than 60 years, and family history of KD.<sup>28</sup> However, our study revealed that most healthcare providers lacked knowledge of these guidelines, reporting that they are far-fetched and applicable to high income countries. According to an Egyptian study, 50% of participants used KDOQI guidelines and 25% were not using any guidelines.<sup>14</sup> In addition, a previous study among primary care physicians has reported limited familiarity with CKD guidelines which was consistent with our study finding.<sup>26</sup> Provision of concise and clear guidelines will streamline the process of screening for KD.

Our study found a gap in keeping and reviewing of patient records during their return visits to the hospital. This caused a break in the continuity of care because patients are most likely to be attended by a new healthcare provider at each visit. In line with our findings, a study in Australia noted that HTN patients whose medical records were reviewed more frequently were more likely to be appropriately screened for KD.<sup>29</sup> This means that in our situation where such medical records are barely available, screening for KD is very likely to remain suboptimal.

## Facilitators of KD Screening

Notwithstanding a number of barriers discussed above, we found that peer support groups, good team work, and CME jointly facilitated screening for KD. Our study findings revealed that peer support groups have been formed majorly to afford financial burden relief for patients through purchasing drugs and paying for investigation large quantities. In addition to financial benefits, previous studies have noted that peer support groups allow sharing of experiences, advice on self-management and decision-making.<sup>30</sup> Similarly, other scholars have described peer support as an effective educational method for patients.<sup>31</sup>

We found that screening for KD required multi-disciplinary input. This multi-disciplinary team included doctors, nurses, counsellors and expert clients (peers). With this kind of team work approach, patients at high risk for KD are identified directly from triage by nurses who then direct them to physicians such that further investigations can be done. Expert clients or patient peers play a facilitating role in screening for KD.<sup>13</sup> However, a recent systematic review could not conclusively associate the observed better patient outcomes, adherence, education and self-management skills with multi-disciplinary KD care.<sup>32</sup>

In our study, health providers reported that CME facilitated screening for KD by equipping them with knowledge. Continuous medical education has proved to keep the knowledge of healthcare providers up to date and increase their confidence which in turn improves patient care process and outcomes.<sup>33</sup> A recent study also concluded that CME-based learning intervention favorably affected the practice of physicians.<sup>34</sup> Therefore, enhanced CME can empower healthcare providers to improve screening for KD.

## Strengths and Limitations

Our sample size was limited to healthcare providers; we did not collect opinions of patients who may have had alternative perspectives on kidney disease screening among older adults with diabetes and/or hypertension. Despite this limitation, our strength relied on collecting information from healthcare providers with diverse back grounds in terms of experience and qualification. Our next step is to explore the patients' perspectives regarding kidney disease screening.

## Conclusions

Efforts to scale up screening for KD are still being dragged behind by financial challenges, poor health seeking behaviors, limited knowledge and awareness, work overload, lack of laboratory supplies, lack of guidelines, and poor medical record keeping. Screening for KD is facilitated by formation of peer support groups, multi-disciplinary cooperation of healthcare providers and CME. Despite its beneficial health outcomes, screening for KD has remained below the desirable standard for optimal improvement of patients' quality of life. There is urgent need to integrate screening for KD in routine and community-based healthcare for all high-risk patients so as to allow timely detection and treatment of this debilitating condition. Establishing cost-effective strategies is paramount to improve screening for KD. This will help to bring under control the ongoing public health and socioeconomic burden posed by the rapidly rising KD morbidity and mortality rates.

## Abbreviations

MRRH, Mbarara Regional Referral Hospital; MUST, Mbarara University of Science and Technology; KD, kidney disease; CME, Continuous medical education; DM, Diabetes mellitus; HTN, hypertension; SHO, Senior House Officer; NCD, Non-communicable diseases; LMIC, Low- and middle-income countries; KDOQI, Kidney Disease Outcomes Quality Initiative.

## Ethics Statement

This study was reviewed and approved by Mbarara University of Science and Technology Research Ethics Committee under approval MUST-2022-586. Administrative clearance was obtained from MRRH. The participants provided written informed consent to participate in this study and publication of anonymized responses in the manuscript.

## Acknowledgments

The authors thank the research assistants, Mbarara Regional Referral Hospital, the study site, and all the participants for accepting to participate in this study.

## Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, and in all these areas; took part in drafting, revising, critically reviewed the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

## Funding

The study was funded by first mile capacity building project, Faculty of Medicine, Mbarara University of science and Technology and partly by the US National Institutes of Health(NIH) under grant number D43TWO11632-01.

## Disclosure

The authors declare no conflicts of interest in this work.

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