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A conceptual model for pluralistic healthcare behavior: results from a qualitative study in southwestern Uganda

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3 **A conceptual model for pluralistic healthcare behavior: results from a qualitative**
4 **study in southwestern Uganda**
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ABSTRACT

Introduction: *Medical pluralism*, or concurrent utilization of multiple therapeutic modalities, is common in various international contexts, and has been characterized as a factor contributing to poor health outcomes in low-resource settings. Traditional healers are ubiquitous providers in most regions, including the study site of southwestern Uganda. It is not well understood why patients in pluralistic settings continue to engage with *both* therapeutic healthcare modalities, rather than simply selecting one or the other. The goal of this study was to identify factors that motivate pluralistic healthcare utilization, and create a general, conceptual framework of pluralistic health behavior.

Methods: In-depth interviews were conducted between September 2017 and February 2018 with patients seeking care at traditional healers (N=30) and at an outpatient medicine clinic (N=30) in Mbarara, Uganda; the study is nested within a longitudinal project examining HIV testing engagement among traditional healer-utilizing communities. Inclusion criteria included age ≥ 18 years, and ability to provide informed consent. Participants were recruited from healer practices representing the range of healer specialties. Following an inductive approach, interview transcripts were reviewed and coded to identify conceptual categories explaining healthcare utilization.

Results: We identified three broad categories relevant to healthcare utilization among study participants: 1) traditional healers treat patients with “care”; 2) biomedicine uses “modern” technologies; and 3) peer “testimony” influences healthcare engagement. These categories describe variables at the healthcare provider, healthcare system, and peer levels that interrelate to motivate individual engagement in pluralistic health resources.

Conclusions: Patients perceive clear advantages and disadvantages to biomedical and traditional care in medically pluralistic settings. We identified factors at the healthcare provider, healthcare system, and peer levels which influence patients’ therapeutic itineraries. Our findings provide a basis to improve health outcomes in medically pluralistic settings, and underscore the importance of recognizing traditional healers as important stakeholders in community health.

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Keywords: Medical pluralism, Uganda, traditional healers, qualitative

STRENGTHS AND LIMITATIONS OF THIS STUDY

- Medical pluralism is common in both high- and low-resource settings, and has been characterized as a factor leading to poor health outcomes for both infectious and non-communicable diseases
- This study identifies factors that motivate utilization of healthcare in a medically pluralistic community
- Patients in pluralistic settings perceive clear advantages and disadvantages of both traditional care and biomedicine; characteristics of healthcare providers, the healthcare system, and peer influences motivate patients to engage with particular healthcare modalities
- Patients often prefer traditional healing instead of biomedicine; this utilization is not simply a function of limited access to biomedical resources
- Traditional healers should be considered important stakeholders in community health

INTRODUCTION

Medical pluralism, or utilization of multiple therapeutic modalities, is common where both biomedical and complementary or alternative treatments are available to patients. This pattern of healthcare engagement is observed in both high-[1,2] and low-resource settings[3-5], and is well described for patients with both acute[6-8] and chronic illness[3,9-11] in various international contexts.

In low- and middle-income countries, traditional medicine is utilized instead of, or in concert with, biomedical therapies. Traditional healers have been defined by the World Health Organization as: 1) persons recognized by local community as healers; 2) having regular patient attendance; and 3) having space to receive and treat patients[5]. They “provide health care by using plant, animal and mineral substances, and other methods based on social, cultural, and religious practices” [12]. Prior work in medically pluralistic contexts shows that initial choice of therapeutic modality is driven by patients’ perceived etiology of illness, and provider trustworthiness[13-16]. Patients may switch modalities in the setting of treatment “failure”, when symptoms worsen or persist despite treatment[13,17].

Medical pluralism has been characterized as a central factor contributing to poor health outcomes. For example, researchers have shown that use of traditional medicine delays HIV testing and ART initiation[18], and interrupts HIV treatment[13], for people living with HIV (PLHIV). In Mozambique, PLHIV initially seeking care from traditional healers experienced significantly longer delays to diagnosis compared with those who did not utilize healers; this delay exponentially increased with corresponding increases in the number of healers consulted prior to receiving HIV testing[18]. In South Africa, medical pluralism was shown to be negatively associated with ART use in a cohort of PLHIV[19]. Research has also demonstrated that medical pluralism contributes to poor outcomes for non-infectious diseases, such as nonadherence to chemotherapy for cancer^{4,11}, or poor outpatient linkage to care for patients with hypertension[11].

In many parts of the world, traditional healers are extensively utilized; for example, it is estimated that 80% of the population in sub-Saharan Africa visit traditional healers[5]. Traditional healer utilization may be partially attributed to accessibility: healers are present in higher numbers than physicians and biomedical resources, particularly in low-

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3 resource settings[5]. However, their popularity cannot be strictly explained by
4 convenience; research in urban regions having high density of biomedical facilities
5 demonstrates similar reliance on traditional healers[1,3]. Patients also seek traditional
6 therapies to address symptoms attributed to ancestral curses or bewitching, believed
7 incurable by biomedicine[20]. Use of traditional medicine is also strongly tied to local
8 religious and ethnic identities[21].
9

10 Biomedical and traditional healers offer distinctive forms of healthcare for patients. In
11 medically pluralistic contexts, it is not well understood why patients continue to engage
12 with *both* therapeutic healthcare modalities, rather than simply selecting one or the
13 other. There have been many disease-specific studies that describe factors influencing
14 pluralistic therapeutic itineraries[17,19,22], but there remains a dearth of knowledge on
15 variables that shape healthcare engagement generally in these communities. The goal
16 of this study was to identify factors that motivate pluralistic engagement with healthcare
17 resources, using qualitative research methods. We sought to characterize salient
18 perceived advantages and disadvantages of each modality, and explain pluralistic
19 therapeutic itineraries in a sub-Saharan African context. These data were used to
20 develop a general, conceptual framework that can inform future research on pluralistic
21 health behavior.
22

23 24 **METHODS**

25 26 **Study Setting and Design**

27 This qualitative study was conducted in Mbarara District, Uganda, a district of 418,000
28 residents located ~275 km southwest of the capital city of Kampala. Southwestern
29 Uganda is a medically pluralistic context, where both traditional and biomedical
30 modalities of healthcare co-exist [23-25]. In this region of sub-Saharan Africa, traditional
31 healers practice herbalism and spiritual healing; they also set broken bones and attend
32 births in the community. Spiritual healers attribute their powers to the *Bachwezi*, which
33 are believed to be ancestral spirits from an ancient kingdom that previously occupied this
34 region of eastern Africa[26,27]. This qualitative study was conducted as part of a multi-
35 year, mixed methods study of HIV services engagement in a medically pluralistic
36 community.
37

38 39 **Sampling and Recruitment**

40 Following a purposive sampling strategy, sixty (N=60) adults were identified to
41 participate as key informants in this study, or “individuals that are especially
42 knowledgeable about or experienced with a phenomenon of interest”[28]. In our case,
43 key informants were selected to represent variation in experiences of receiving
44 modalities of healthcare: biomedical and traditional. That is, participants were patients
45 representing two subgroups: (1) individuals receiving treatment from traditional healers
46 (N=30), and (2) individuals receiving treatment from a biomedical general medicine
47 outpatient clinic (N=30). Inclusion criteria for all participants were: 1) age ≥18 years; 2)
48 ability to provide informed consent; and 3) seeking healthcare at either a traditional
49 healer or outpatient biomedical clinic in Mbarara District.
50

51 A target sample size of thirty participants per subgroup was guided by prior research
52 suggesting that a range between 20 and 30 interviews is adequate to reach *thematic*
53 *saturation*, the point at which no new concepts emerge from subsequent interviews[29-
54 31]. Two authors (RS and JMA) reviewed transcripts as they were completed and
55 corresponded weekly to identify and discuss emerging themes. After twenty-five
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3 interviews per group were conducted, the two authors agreed that interview content no
4 longer contained new or surprising content. Five additional interviews per group were
5 conducted to confirm thematic saturation.
6

7 Participants in the traditional medicine subgroup were recruited from twelve traditional
8 healer practices which reflected the range of specialties in this region (herbalist, bone
9 setter, traditional birth attendant and spiritual healer). For the purposes of this study, we
10 excluded Christian-based spiritual healers (i.e., “Born Again” or Pentecostal ministers).
11 Participants in the biomedical subgroup were recruited from Mbarara Municipality Clinic,
12 a general outpatient government-run clinic in the city of Mbarara, which serves
13 approximately 50,000 patients per year.
14

15
16 Healers gave permission for study staff to recruit patients at their practices. At both
17 traditional and biomedical facilities, research assistants approached patients following
18 completion of visits healing sessions to assess eligibility and interest in participation.
19 Recruitment was carried out over a period of six months (September 2017 - February
20 2018);
21

22 **Data Collection**

23 Data collection for this study consisted of a single in-depth interview, conducted by
24 Ugandan research assistants (RAs) trained in qualitative research methods. Interviews
25 followed an interview guide that included the following topics: 1) details of the patient’s
26 therapeutic itinerary for his/her current symptoms; 2) symptoms that motivated him/her
27 to seek healthcare; 3) attitudes towards, and experiences with, traditional and
28 biomedicine; and 4) details of concurrent or recent biomedical and traditional healer
29 visits. Interviews lasted approximately one hour and were conducted in the local
30 language (Runyankore), in private locations at either healer practices or at the
31 participating biomedical clinic. Participants received the equivalent of 10,000 Ugandan
32 Shillings (UGX, ~\$3 USD) in household staples (cooking oil, sugar, salt, soap) in
33 recognition the time and effort required to participate in the interview.
34
35

36 Interviews were digitally recorded, then transcribed and translated into English by the
37 same RA who had conducted the interview. All transcripts were produced within 72
38 hours of the interview being completed. The transcripts were reviewed by the first author
39 for quality, content, and to provide feedback to the RAs regarding interviewing
40 techniques. English transcripts were spot-checked against audio recordings by an author
41 (JMA, who is fluent in Runyakore and English) to ensure validity and integrity of
42 translations.
43

44 **Analysis of Data**

45 A three-step, inductive approach was used to analyze the qualitative data, as follows: (1)
46 development of codes; (2) coding; and (3) category construction.
47

48 **Development of Codes.**

49 Following an inductive approach to qualitative data analysis, interview transcripts were
50 reviewed by the first author (RS) concurrently with data collection to identify an initial set
51 of codes, or labels that described key concepts in the dataset. The inductive strategy
52 provided overlap between qualitative interviewing and data analysis, allowing for iterative
53 engagement with the dataset to identify emerging concepts of interest. As additional
54 transcripts were produced and reviewed, codes were reviewed and refined to fit the
55 data. Using the “constant comparison” method, newly coded text segments were
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compared to text segments previously marked with the same code to determine if they reflected the same concept^[32]. This process was repeated until all transcripts had been reviewed. A final list of codes was produced through discussion and consensus among three co-authors (RS, JMA and RK).

Coding:

All study transcripts were coded, and re-coded when necessary, using the finalized list of codes. QSR NVivo 11 (QRS International Pty Ltd) was used for coding and data organization, but not in development of codes.

Category Construction:

Next, coded data were examined and grouped to form conceptual categories, where data are aggregated based on similarities of meaning. Categories are defined below using text examples. Quotes from participants are shown as italicized and indented. Interrelationships between categories were identified to create a conceptual framework illustrating factors that influence pluralistic health behavior (Figure 1).

Ethical Statement:

This research was approved by the Human Research Protections Program Institutional Research Board at the University of California, San Diego (#170672), Weill Cornell Medical College (#1803019105), Mbarara University of Science and Technology Research Ethics Committee (#16/01-17) and the Ugandan National Council for Science and Technology (#SS4338). Participants provided written and verbal informed consent in Runyankore.

RESULTS

Characteristics of Participants

Characteristics of study participants appear in Table 1. Over half of the sample had clinical experience with both biomedical and traditional modalities of healthcare. However, pluralistic behaviors were much more common among patients of traditional healers. The vast majority of participants recruited from the biomedical clinic denied prior experience receiving care from traditional healers (n=28/30, 93%); in contrast, *all* (n=30) traditional healer patients report prior experience receiving biomedical treatment.

Participants recruited from healer practice locations were slightly older, with a higher proportion being married, and with higher reported monthly incomes, compared to the

Characteristic	Traditional healer clients (N=30)	Biomedical clients (N=30)
Had previously received care from alternate modality	N=30 (100%)	N=2 (7%)
Age (in years)	36.7 (mean)	31.6 (mean)
Female gender (%)	N = 16 (53%)	N= 18 (60%)
Primary school education or less	N= 14 (47%)	N = 13 (43%)
Household size (in persons)	5.4 (mean)	5.3 (mean)
Marital status	Single (N = 7) Married/Cohabiting (N = 21) Widowed (N = 2)	Single (N = 11) Married/Cohabiting (N = 17) Widowed (N = 2)
Christian religion	N = 25	N = 23
Monthly household income (in USD)	\$121 (mean)	\$45 (mean)
Type of healer visited	Spiritualist (N=12) Bone setter (N=10) Traditional birth attendant (N=4) Herbalist (N=4)	N/A

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3 biomedicine group. Other characteristics, including gender, household size, highest level
4 of education, and religious affiliation, were similar between the two groups.
5

6 **Qualitative Results**

7 Overview

8 Our qualitative data demonstrate salient perceived advantages and disadvantages to
9 both healthcare modalities, which motivate patient engagement with healthcare
10 resources. We have developed three broad categories representing influences on
11 healthcare utilization that were evident in the data. They are summarized as follows: 1)
12 traditional healers treat patients with “care”; 2) biomedicine uses “modern” technologies;
13 and 3) peer “testimony” influences healthcare engagement. Within each of these
14 categories, we provide examples to illustrate how these factors drive plural healthcare
15 engagement. We consider each one separately, below, and then present a conceptual
16 model for how these factors interrelate to create therapeutic itineraries in southwestern
17 Uganda.
18

19 *A. Traditional healers care about their patients*

20 Patients recruited from traditional healers report positive experiences with their care,
21 specifically describing that treatments effectively relieve their symptoms. Participants
22 state that they prefer traditional therapies because traditional practitioners “heal faster”.
23 This efficient healing is sometimes attributed to the fact that traditional practitioners
24 spend more time personally treating and caring for their patients, compared with
25 healthcare workers in biomedical settings:
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27

28 *Those [bonesetters] are super! They heal faster than biomedical. When you*
29 *take your patient to a bonesetter, he does not take long to get healed, compared*
30 *to one in the hospital. In hospitals, the healing process is long because they do*
31 *not do much more than hanging you there [in traction] and leave you. You can*
32 *even become lame because they do not check to see whether you are healing or*
33 *not. But for the healer, he does his reviews [checks your wound healing]*
34 *constantly. (Traditional healer patient, female, 68 years old)*
35

36 Patients receiving traditional care also state that they are treated with respect when
37 visiting healers, and that healers are motivated to care for patients, rather than being
38 strictly economically driven. Participants reported that healers attend to patients
39 immediately, even if they did not have money; a few participants stated that healers
40 allowed them to pay for services rendered in installments, or in kind (through farm
41 goods). A participant seeking care from a traditional birth attendant described her
42 preference for traditional healing, emphasizing the kindness of her practitioner:
43
44

45 *[The healer] does everything for you. Her services are excellent. In fact, when*
46 *you deliver [your children] from here, you do not even think of going elsewhere*
47 *another time. She cares so much about her clients. In fact, for all my*
48 *pregnancies, I received antenatal care from this healer. She is my neighbor, and*
49 *instead of going to sit at the hospital the whole day waiting for checkup, I come*
50 *here. She is my neighbor and her services are good. So, I come get my antenatal*
51 *checkup, and go back home to do my chores. (Traditional healer patient, female*
52 *35 years old)*
53

54 In contrast, patients describe experiences with biomedicine with narratives of disrespect,
55 mistreatment, neglect or “abuse”. The central message of these biomedical testimonies
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3 is that healthcare workers do not care about their patients. In some cases, participants
4 referred to these accounts while explaining why they tend to avoid biomedical facilities.
5 A woman describes her experience receiving antenatal care at the local hospital:
6

7 *I came to this hospital for antenatal care and found a nurse who treated me*
8 *badly. She would tell you to lay on the bed and instead of telling you what to do,*
9 *she would shout at you and say, "Don't face me! Face the other side!" in a loud*
10 *voice, and you wonder what the problem was. She embarrassed me and I felt*
11 *ashamed. I promised myself never to return in this hospital She would only*
12 *shout at us. She was horrible. (Biomedical patient, female, 38 years old)*
13

14
15 A number of participants describe experiences at biomedical facilities where they are
16 never attended to by biomedical staff, despite waiting for many hours – sometimes
17 spending the entire day without receiving medical attention. These hours spent waiting
18 come at the expense of childcare, household duties and income-generating activities.
19 One man describes his experience seeking biomedical care for a toothache as follows:
20

21 *I went to the referral hospital and spent there the whole day without treatment.*
22 *The following morning, when I went back, I was given only Panadol*
23 *[Acetaminophen]. I felt so sad. (Biomedical patient, male, 56 years old)*
24

25 Another patient states that he gave up after waiting all day for a voluntary circumcision
26 procedure:
27

28 *You reach there and sit for the whole day without treatment. Drugs are never*
29 *there and health workers do not attend to patients as it should be. They arrive at*
30 *work late and leave work early. They are really bad. I went [to the clinic] one time*
31 *for circumcision and sat there for many hours until I got hungry and gave up. I left*
32 *without seeing any doctor. (Traditional healer patient, male, 27 years old)*
33

34 **B. Biomedicine uses modern technologies to heal**

35
36 Participants state that biomedical care is preferred in instances where “modern”
37 technologies can be utilized to provide a diagnosis for one’s symptoms, and guide
38 treatment. Through blood and radiological tests, healthcare providers can identify the
39 specific cause of a patient’s illness, and provide appropriate care. Patients perceive that
40 the information generated by biomedical technology validates the therapies administered
41 to them:
42

43 *They use machines to diagnose and test for conditions. They give the right*
44 *medical information. (Biomedical patient, male, 25).*
45

46 Having received a specific diagnosis, participants also believe that the treatment
47 recommended by healthcare workers will be effective in alleviating their symptoms. For
48 example, one participant described how appropriate medicines have the capacity to
49 heal, even if taken in small amounts:
50

51 *When you come [to the clinic] you get diagnosed and they write for you a*
52 *prescription and you get the medicine then their service is good ... Even if you*
53 *get very little medicine from them and take it, you get healed. (Biomedical*
54 *patient, female, 60 years old)*
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3 Another patient explains why the capacity to intervene with modern biomedical
4 technology is more effective in treating symptoms than traditional medicine:
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6 *Biomedical facilities are good ... when you are, for instance, in a critical*
7 *condition, they can put you on life support machines, or they can put you on a*
8 *drip. They can also give you tablets and injections that can help you. Traditional*
9 *healers can't manage something like that. They don't have modern equipment.*
10 *They don't have tablets, and they don't have drips and injections. (Traditional*
11 *healer patient, male, 26 years old)*
12

13
14 Results from biomedical testing guide what some participants describe as “proper”,
15 effective treatment, compared with traditional healing where therapies are provided in
16 the absence of any diagnostic testing:
17

18 *[Biomedical facilities] diagnose you and inform you of the ailment that you are*
19 *suffering from, and at times inform you that your health is okay ... When you visit*
20 *biomedical health facilities they diagnose you and inform you of your results and*
21 *in case you are HIV positive, you can start on medicine ... [Traditional healers]*
22 *don't have equipment to diagnose, so how do they diagnose for conditions? ... I*
23 *don't trust them. (Biomedical patient, Female, 22 years old)*
24

25 While biomedicine is favored for its use of diagnostic technologies, other participants
26 describe preference for traditional healing *specifically because* these approaches could
27 enable avoidance of biomedical procedures, which participants describe as
28 “unnecessary” and having high morbidity and mortality. Participants state that an
29 advantage of traditional healing is that it supports the body to heal “naturally”, rather
30 requiring modern, invasive interventions. Participants report seeking traditional care after
31 having been told by biomedical providers that they would require an operation in order to
32 recover. Those who ultimately healed after receiving traditional care declared that
33 biomedical providers rush to use modern technologies, instead of allowing the body to
34 heal on its own. One patient describes his experience receiving care from a bonesetter,
35 after suffering severe extremity fractures after falling from a motorcycle:
36

37
38 *[The hospital staff] told me that the doctors will cut off my leg because it was*
39 *badly injured and that there was no way they could fix it ... When we reached*
40 *[this healer], they told me that the bone that joins the knee was broken but*
41 *promised that since I was in that place, in two to three weeks, I will be able to*
42 *walk again. They then aligned my leg and started the treatment ... I am now*
43 *getting better. If I had remained at the hospital, I know my leg would have been*
44 *cut off by now. (Traditional healer patient, male, 35 years old)*
45

46 Another patient describes how effective treatment from an herbalist allowed her sister to
47 avoid a Caesarean section with her twin pregnancy:
48

49 *These healers are very useful ... my elder sister had a problem with her twin*
50 *pregnancy. She was stuck with the pregnancy because the babies could not*
51 *move. They took her to one of the traditional healers and was given medicine*
52 *which helped her so much and she delivered her babies without difficulties. We*
53 *thought she would be operated on while giving birth [via Caesarean section]*
54 *because the doctors at referral hospital had told her that she will not manage to*
55 *push and advised her to go for an operation, which did not happen because of*
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3 *the medicine the healer gave her. (Traditional healer patient, female, 30 years*
4 *old)*
5

6 Participants described fear of utilizing biomedical facilities to deliver their children, as
7 they believed that physicians would perform unnecessary Caesarian sections,
8 considered a high-risk procedure for both mothers and infants:
9

10 *[Doctors] rush women to the operating theatre when it's not necessary. Many*
11 *women and babies have lost their lives due to the negligence of doctors. Women*
12 *fear to deliver from hospital. (Traditional healer patient, male, 26 years old)*
13

14 C. Peer “testimony” influences healthcare engagement

15 Our participants recount social narratives, or “testimonies” which describe healthcare
16 experiences among peers within their communities. These discursive events evaluate a
17 provider’s competence and effectiveness in addressing ailments, and describe negative
18 or positive outcomes of treatments. Participants indicate that peer testimonies strongly
19 influence where they choose to seek care for their symptoms. We found that biomedical
20 narratives frequently reinforced individual reports of mistreatment; in contrast, narratives
21 about traditional healing were generally positive and affirmed the “real” nature of this
22 form of healthcare.
23

24
25 Numerous participants who received care from traditional healers describe negative peer
26 narratives about biomedicine. A participant describes the testimony from his neighbor
27 that influenced his decision to seek care from a traditional bonesetter:
28

29 *My neighbor reached [the referral hospital after injuring his leg], but nothing much*
30 *was done. They made him sit on the waiting bench and the doctor told the*
31 *caretaker to go and buy a bandage and find an empty box. The doctor then*
32 *dismantled the box and tied it on the leg using the bandage and left him there.*
33 *He remained there until morning. He never got any treatment [for the leg*
34 *injury] apart from the empty boxes they tied on the leg. I will never forget what he*
35 *experienced from the referral hospital. It was so bad and so discouraging. Health*
36 *workers do not care about patients. (Traditional healer patient, male, 57 years*
37 *old)*
38
39

40 A number of participants recalled community narratives indicating that healthcare
41 workers would intentionally withhold treatment or harm their patients. One woman
42 seeking care at a traditional birth attendant practice describes stories that made her fear
43 that she would be harmed at the hands of healthcare workers:
44

45 *There was a woman in labor who was supposed to be taken to the operating*
46 *theatre but the nurses asked her for money, which she did not have. They*
47 *refused to work on her until other patients contributed some money and gave it to*
48 *the nurses ... Those nurses do not mind whether you die from there or not ...*
49 *There is also one mother I heard about who took her child for immunization and*
50 *got an argument with the nurse. Intentionally the nurse gave the child overdose*
51 *and the child died. Some of these health workers are so wicked. (Traditional*
52 *healer patient, female, 35 years old)*
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3 Negative peer testimonies were not limited to patients of healers. For example, one
4 woman seeking biomedical care told a story about her neighbor suffering mistreatment
5 at the same facility.
6

7 *My pregnant neighbor delivered her baby in the village compound. [When they*
8 *arrived at this hospital for post-partum care], the nurse abused her, saying that*
9 *she should take her stupidity back to her village. They do not care. (Biomedical*
10 *patient, female, 22 years old).*
11

12 In stark contrast to narratives surrounding biomedical care, peer testimony surrounding
13 traditional healing is largely positive. Healers are lauded for their effective care, and
14 patients are guided by peer testimonials in selecting which healer to visit for their
15 ailments. One participant seeking care at a traditional herbalist describes the impact of
16 peer endorsements on her decision to seek care from this particular healer:
17

18 *This healer is popular and well known, and wherever you go, people will*
19 *recommend her to treat your sick child ... I have seen so many different people*
20 *come here to receive treatment ... I am impressed. (Traditional healer patient,*
21 *male, 18 years old).*
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24 A central concept in many testimonies about traditional medicine is the genuineness of
25 the healer, and how they should be set apart from traditional healers who may be “fake”
26 or “quacks”. One participant describes how testimonies from peers with similar injuries
27 directed him to seek care from a specific bonesetter, and how testimonies generate
28 more patients for particular healers:
29

30 *Most traditional healers are quacks, and personally I don't trust them.*
31 *[Interviewer: Then how do you know that you will heal from this treatment?]*
32 *I get the confidence from other people who have been treated here. There is a*
33 *man from a nearby dairy. He bones were more severely broken than mine, but*
34 *he healed from here, and is now doing his work. I have heard many people's*
35 *testimonies that they have been healed from here ... When I come here and get*
36 *healed, I will direct another one because he will be healed too and that person*
37 *will also direct others... A healer who is real does not need to advertise on the*
38 *radios because the people they heal create market for them. (Traditional healer*
39 *patient, Male, 26 years old)*
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43 DISCUSSION

44 This study identified factors that drive engagement with healthcare resources in a
45 medically pluralistic setting, and identified three central factors that contribute to
46 therapeutic pluralism. These factors may be summarized as follows: 1) traditional
47 healers care about their patients, while biomedical providers do not; 2) biomedical
48 technologies can provide diagnosis and guide treatment, but these technologies are
49 sometimes intentionally avoided; and 3) peer testimonies influence healthcare utilization,
50 largely in favor of traditional healing. Figure 1 presents a conceptual model integrating
51 our findings to show how influences at the healthcare provider, healthcare system, and
52 peer levels influence individual engagement in pluralistic settings. This model is not
53 inclusive of all variables that influence health engagement, but illustrates categories that
54 were described by our participants in driving their own healthcare decision making,
55 specifically regarding decisions to utilize traditional or biomedical care.
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4 First, our data illustrate that healthcare provider characteristics are of central importance
5 to patients. Specifically, the quality of interpersonal interactions can either motivate or
6 deter engagement with healthcare services. In our study, patient-provider interactions
7 with traditional healers are described as generally respectful and supportive. In contrast,
8 patient-provider interactions in biomedical contexts included narratives of neglect and
9 “abuse”. The health effects of negative interactions with biomedical staff have been well
10 described in cases of disengagement with HIV care among people living with HIV[33-
11 35], decreased PrEP utilization among key populations[36] and among women giving
12 birth[37-39]. Other researchers have similarly shown that traditional healers are favored
13 in some cases because they provide social support within their communities, functioning
14 as counselors, social workers, spiritual guides, and legal advisors[5,20,25,40-44].
15

16
17 Characteristics of the available healthcare systems impact healthcare engagement.
18 Participants appreciate that biomedical laboratory and radiologic testing guide diagnosis
19 and treatment, thereby gaining reassurance that they can heal from their illness through
20 “proper” treatment. We note that the desire for healthcare directed by test results is the
21 central factor favoring biomedical healthcare utilization among our participants.
22 Interestingly, data from high-resource contexts has shown that diagnostic test results do
23 not increase patient reassurance or decrease health-related anxiety in outpatient
24 biomedical settings[45,46]. It is likely that in our medically pluralistic study site, the
25 capacity of biomedical facilities to perform diagnostic testing is distinctive in contrast to
26 traditional healing approaches, and therefore considered a benefit. Further, our
27 qualitative data draws from patients’ own words describing reassurance in receipt of
28 diagnostic testing, whereby the prior studies employ quantitative measurements of
29 patient reassurance and anxiety.
30

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32 We also found that traditional healthcare is sometimes preferred as a means to avoid
33 invasive procedures, such as orthopedic fixation, limb amputation, or Caesarean section.
34 Our findings are congruent with prior research demonstrating avoidance of facility-based
35 obstetric services, preference for traditional home birth[25,39,47], and bonesetters to
36 heal orthopedic injuries in sub-Saharan Africa[48,49]. Motivation to avoid invasive
37 operative procedures is further explained by data that show poor post-operative
38 outcomes throughout sub-Saharan Africa[50]; for example, maternal mortality after
39 Caesarean section is fifty times higher in Africa compared with high income
40 countries[51]. As such, patients consider invasive biomedical procedures high risk, and
41 seek to avoid them through receipt of traditional therapies.
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44 Additionally, the content of peer testimonies strongly influences patients’ decisions to
45 utilize traditional or biomedical care. Peers can be defined as other adults residing in the
46 same community as the participant, who have relevant experiences receiving biomedical
47 care, traditional care, or both. Peer influences have been shown to have strong impact
48 on individual healthcare engagement in the cases of HIV services utilization[52-54],
49 adolescent health[55,56], mental health[57], and substance misuse[58], for example.
50 Our study shows how peer testimonies serve as endorsements of traditional healing,
51 legitimizing its use through descriptions of clinical effectiveness. In contrast, largely
52 negative narratives regarding biomedicine potentiate avoidance of these facilities and
53 services.
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56 Finally, our data contribute to a growing body of work that emphasizes the important role
57 of traditional healers within the communities they serve. Our findings illustrate why
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3 traditional medicine may be preferred, even when biomedical services are available and
4 accessible to patients. Lack of biomedical engagement in pluralistic settings should not
5 simply be attributed to lack of access, but should be considered an individual's informed
6 healthcare choice. We suggest that public health interventions specifically engage with
7 traditional healers to increase intervention impact and community acceptability; they are
8 well positioned allies for any community-based health program. Studies have shown that
9 healers are interested in working with biomedical providers to improve health outcomes
10 for their patients[59-61].
11

12 There are a few limitations of this study. It is beyond the scope of this research to
13 investigate the effectiveness or appropriateness of therapies administered by providers
14 to the participants in our study. Similarly, it is out of our scope to consider the
15 ethnopharmacological and ethnobotanical literature investigating the clinical efficacy of
16 traditional therapies, which could impact a patients' clinical improvement and
17 assessment of effective treatment; that literature is not discussed here. Last, qualitative
18 data are meant to be specific and contextual rather than broadly generalizable, and are
19 useful in generating hypotheses. As such, our data suggest numerous directions for
20 future study; for example, do the factors we identified influence patients differentially as
21 a function of patient age, gender, socio-economic status, or other individual
22 characteristics? Are there distinctions among healers or their clients that predict
23 increased biomedical or traditional utilization, such as gender, specialty, symptoms, or
24 cost? How can public health initiatives that collaborate with traditional healers be
25 optimally delivered in medically pluralistic settings?
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29 **CONCLUSIONS**

30 Patients perceive clear advantages and disadvantages to biomedical and traditional care
31 in medically pluralistic settings. We identified factors at the healthcare provider,
32 healthcare system, and peer levels which can influence patients' therapeutic itineraries,
33 and illustrate why traditional healers are sometimes preferred. Our findings provide a
34 basis for public health interventions in medically pluralistic communities, and underscore
35 the importance of recognizing and engaging with traditional healers as important
36 stakeholders in community health.
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43

44 **CONTRIBUTORSHIP STATEMENT**

45 RS conceived of the study. RK and JMA provided input on study design, study
46 procedures. RS and JMA oversaw data collection. RS was primarily responsible for data
47 analysis, with input from JMA, RK and NW. RS composed the first draft of the
48 manuscript. All authors provided input and approve of the final submission.
49

50 **COMPETING INTERESTS**

51 The authors declare no competing interests.
52

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DATA SHARING STATEMENT

Deidentified data may be shared upon reasonable request by emailing the first author.

PATIENT AND PUBLIC INVOLVEMENT STATEMENT

Patients were included as participants in this study. They did not directly participate in the design or implementation of the study, as the purpose of the study was to elicit patient perspectives on community healthcare resources. Results of this study were used to guide development of a study community advisory board, which includes patients and other stakeholders, including healthcare providers and community leaders.

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7 **FIGURE CAPTION**

8 Figure 1. Conceptual model showing key factors within various levels (healthcare
9 provider, healthcare system, peer) influencing individual health behavior within medically
10 pluralistic contexts.
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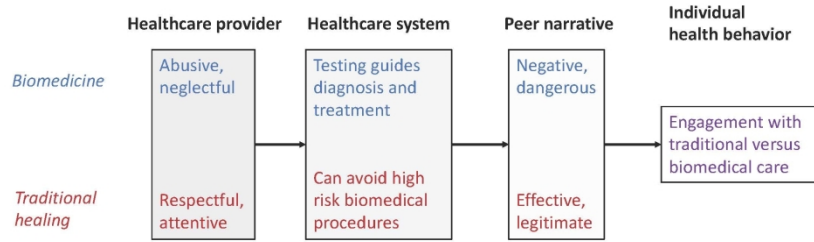


Figure 1. Conceptual model showing key factors within various levels (healthcare provider, healthcare system, peer) influencing individual health behavior within medically pluralistic contexts.

338x190mm (200 x 200 DPI)

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3 **A conceptual model for pluralistic healthcare behavior: results from a qualitative**
4 **study in southwestern Uganda**
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ABSTRACT

Introduction: *Medical pluralism*, or concurrent utilization of multiple therapeutic modalities, is common in various international contexts, and has been characterized as a factor contributing to poor health outcomes in low-resource settings. Traditional healers are ubiquitous providers in most regions, including the study site of southwestern Uganda. Where both informal and formal healthcare services are both available, patients do not engage with both options equally. It is not well understood why patients choose to engage with one healthcare modality over the other. The goal of this study was explain therapeutic itineraries in a sub-Saharan African context and create a conceptual framework of pluralistic health behavior.

Methods: In-depth interviews were conducted from September 2017 – February 2018 with patients seeking care at traditional healers (N=30) and at an outpatient medicine clinic (N=30) in Mbarara, Uganda; the study is nested within a longitudinal project examining HIV testing engagement among traditional healer-utilizing communities. Inclusion criteria included age ≥ 18 years, and ability to provide informed consent. Participants were recruited from practices representing the range of healer specialties. Following an inductive approach, interview transcripts were reviewed and coded to identify conceptual categories explaining healthcare utilization.

Results: We identified three broad categories relevant to healthcare utilization: 1) traditional healers treat patients with “care”; 2) biomedicine uses “modern” technologies; and 3) peer “testimony” influences healthcare engagement. These categories describe variables at the healthcare provider, healthcare system, and peer levels that interrelate to motivate individual engagement in pluralistic health resources.

Conclusions: Patients perceive clear advantages and disadvantages to biomedical and traditional care in medically pluralistic settings. We identified factors at the healthcare provider, healthcare system, and peer levels which influence patients’ therapeutic itineraries. Our findings provide a basis to improve health outcomes in medically pluralistic settings, and underscore the importance of recognizing traditional healers as important stakeholders in community health.

Keywords: Medical pluralism, Uganda, traditional healers, qualitative

STRENGTHS AND LIMITATIONS OF THIS STUDY

- This study illuminates factors that motivate engagement with healthcare resources by using data from biomedical and traditional medicine utilizers
- This study employed qualitative methods to explore participants' own experiences of healthcare modalities, and identify perceived advantages and disadvantages of each form of healing
- Participants within the traditional medicine group had nearly all previously sought biomedical care, while the biomedical group largely denied prior use of traditional medicine
- While the data gathered is highly contextual and specific to the study context, the conceptual model presented offers a broad application to other medically pluralistic communities
- Based on study findings, we suggest future approaches to healthcare initiatives, policies, and research in pluralistic settings

INTRODUCTION

Medical pluralism, or utilization of multiple therapeutic modalities, is common where both biomedical and complementary or alternative treatments are available to patients. This pattern of healthcare engagement is observed in both high-[1-3] and low-resource settings[4-6], and is well described for patients with both acute[7] and chronic illness[8-10] in various international contexts. In low- and middle-income countries, complementary and alternative healthcare services are often provided by traditional healers, who practice outside of the formal biomedical system. Traditional healers are broadly defined by the World Health Organization as: 1) persons recognized by local community as healers; 2) having regular patient attendance; and 3) having space to receive and treat patients[11,12]. They “provide health care by using plant, animal and mineral substances, and other methods based on social, cultural, and religious practices”[13,14]. It is estimated that 80% of the population in sub-Saharan Africa visit traditional healers[15].

As such, traditional healers are an initial point of contact for patients in medically pluralistic settings. Patients may prefer informal health services from traditional healers because of their increased accessibility: healers are present in higher numbers than physicians and biomedical facilities, particularly in low-resource settings[16,17]. However, their popularity cannot be strictly explained by convenience. Research in urban regions having high density of biomedical institutions demonstrates similar reliance on traditional healers[16-18]. Patients may also seek out traditional therapies to address symptoms attributed to ancestral curses or bewitching, believed incurable by biomedicine[19]. Use of traditional medicine is also strongly tied to local religious and ethnic identities[20]. Patients may pursue traditional healing in the setting of biomedicine treatment “failure”, when symptoms worsen or persist despite ongoing therapies[21,22].

Prior research has shown that traditional healer use is a factor contributing to poor health outcomes among patients. For example, receiving care from a traditional healer has been shown to delay HIV testing and antiretroviral therapy (ART) initiation[23], and interrupt HIV treatment[22] for people living with HIV (PLHIV). In Mozambique, PLHIV initially seeking care from traditional healers experienced significantly longer delays to diagnosis compared with those who did not utilize healers; this delay exponentially grew with corresponding increases in the number of healers consulted prior to receiving HIV testing[23]. In South Africa, medical pluralism was shown to be negatively associated

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3 with ART use in a cohort of PLHIV[24]. Use of traditional healers was also identified as
4 an important variable contributing to the recent Ebola outbreak in West Africa[25].
5 Studies have demonstrated that medical pluralism similarly contributes to poor outcomes
6 for non-infectious diseases, such as nonadherence to chemotherapy for cancer[26,27],
7 or poor outpatient linkage to care for patients with hypertension[28].
8

9
10 Because they are frequently consulted for most types of illness, traditional healers could
11 be important allies for public health initiatives. Some programs have attempted to
12 engage with healers for these purposes, which have included trainings for healers to
13 deliver counseling and facility referral for HIV[29,30], TB[31], or malaria testing[32], or to
14 increase uptake of prenatal care[33]. However, in most cases, program effectiveness
15 has been limited by the fact that patients may not complete referrals to facilities. These
16 findings highlight the fact that where both informal and formal healthcare services are
17 available, patients do not engage with both options equally.
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19
20 There remains a critical lack of understanding about why patients choose to utilize one
21 healthcare resource, but not another. It is clear that biomedicine and traditional healing
22 offer distinctive forms of healthcare for patients. But there is a dearth of knowledge on
23 perceived advantages and disadvantages of each modality from the perspective of the
24 healthcare user. Without this information, healthcare initiatives in pluralistic settings
25 cannot be truly “patient-centered”, and are at risk for failure. The goal of this study was
26 to identify factors that motivate engagement with healthcare resources, using qualitative
27 research methods. We sought to explain therapeutic itineraries in a sub-Saharan African
28 context by conducting interviews with users of biomedical and traditional healthcare
29 resources. These data were used to develop a general, conceptual framework that can
30 inform future work in medically pluralistic settings.
31

32 **METHODS**

33 **Study Setting and Design**

34
35 This qualitative study was conducted in Mbarara District, Uganda, a rural district of
36 418,000 residents located ~275 km southwest of the capital city of Kampala.
37 Southwestern Uganda is a medically pluralistic context, where both traditional and
38 biomedical modalities of healthcare co-exist[34-36]. In this region of sub-Saharan Africa,
39 traditional healers practice herbalism and spiritual healing; they also set broken bones
40 and attend births in the community. Spiritual healers attribute their powers to the
41 *Bachwezi*, which are believed to be ancestral spirits from an ancient kingdom that
42 previously occupied this region of eastern Africa[37,38]. In Uganda, traditional healing is
43 not formally recognized by the Ministry of Health; there is no centralized oversight of
44 traditional healing training programs or services. This research was conducted as part of
45 a multi-year, mixed methods study of HIV services engagement in a medically pluralistic
46 community.
47

48 **Sampling and Recruitment**

49
50 Following a purposive sampling strategy, sixty (N=60) adults were identified to
51 participate as key informants in this study, or “individuals that are especially
52 knowledgeable about or experienced with a phenomenon of interest”[39]. In our case,
53 key informants were selected to represent variation in experiences of receiving
54 modalities of healthcare: biomedical and traditional. That is, participants were patients
55 representing two subgroups: (1) individuals receiving treatment from traditional healers
56 (N=30), and (2) individuals receiving treatment from a biomedical general medicine
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3 outpatient clinic (N=30). Inclusion criteria for all participants were: 1) age ≥ 18 years; 2)
4 ability to provide informed consent; and 3) seeking healthcare at either a traditional
5 healer or outpatient biomedical clinic in Mbarara District.
6

7 Both verbal and written informed consent were obtained by Ugandan research
8 assistants (RAs) prior to enrollment. After verbally reviewing the consent form, research
9 staff used a 5-item questionnaire to assess whether the potential participant understood
10 the study and consent process. This questionnaire posed questions critical to
11 demonstrating consent, such as “How much time will this take you?”; “What are the
12 possible benefits for you?”. If a potential participant demonstrated errors in
13 understanding, these were corrected, and potential participants asked if they needed
14 further clarification. If, after further attempts to clarify misunderstandings, study staff
15 determined that the potential participant did not comprehend the consent process, or
16 critical aspects of the study, they were not enrolled.
17

18
19 Participants in the traditional medicine subgroup were recruited from twelve traditional
20 healer practices which reflected the range of specialties in this region (herbalist, bone
21 setter, traditional birth attendant, and spiritual healer). All were located within 20
22 kilometers of Mbarara town center. It is well established that men tend to have low
23 uptake of in healthcare services in sub-Saharan Africa[1-3]. In order to ensure that male
24 perspectives were represented, we recruited two-thirds of participants at healer practices
25 who were known to provide services for men. Therefore, more bonesetter and spiritual
26 healer patients are included in the traditional healer group. For the purposes of this
27 study, we excluded Christian-based spiritual healers (i.e., “Born Again” or Pentecostal
28 ministers). Participants in the biomedical subgroup were recruited from Mbarara
29 Municipality Clinic, a general outpatient government-run clinic in the town of Mbarara,
30 which serves approximately 50,000 patients per year. Services at this clinic are provided
31 free of charge.
32

33
34 At both traditional and biomedical facilities, RAs approached patients following
35 completion of visits to assess eligibility and interest in participation. Potential participants
36 were individually recruited by RAs, who visited recruitment sites once per week during
37 business hours to screen for eligible patients. Recruitment visits were scheduled on
38 random days of the week to maximize variation of participants included in this study. A
39 maximum of two participants was enrolled during each site visit in order to allow ample
40 time to review informed consent and conduct minimally-structured interviews. This
41 approach ensured interview quality, and was central to the inductive data analysis
42 process by providing time to review interview content, provide feedback to RAs, and
43 identify preliminary codes (see “Data Collection” and “Analysis of Data” sections for
44 more details). Biomedical clinic leadership and traditional healers gave permission for
45 study staff to recruit patients at their practices. Recruitment was carried out over a period
46 of six months (September 2017 - February 2018).
47

48
49 A target sample size of 30 participants per subgroup was guided by prior research
50 suggesting that a range between 20 and 30 interviews is adequate to reach *thematic*
51 *saturation*, the point at which no new concepts emerge from subsequent interviews[40-
52 42]. Two authors (RS and JMA) reviewed transcripts as they were completed and
53 corresponded weekly to identify and discuss emerging themes. After 30 interviews per
54 group were conducted, the authors agreed that thematic saturation had been reached,
55 and interview content no longer contained new or surprising content.
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Data Collection

Data collection for this study consisted of a single in-depth interview, conducted by Ugandan RAs trained in qualitative research methods. Interviews followed an interview guide that included the following topics: 1) details of the patient's therapeutic itinerary for his/her current symptoms; 2) symptoms that motivated him/her to seek healthcare; 3) attitudes towards, and experiences with, traditional and biomedicine; and 4) details of concurrent or recent biomedical and traditional healer visits. Interviews lasted approximately one hour and were conducted in the local language (Runyankore), in private locations at either healer practices or at the participating biomedical clinic. Participants received the equivalent of 10,000 Ugandan Shillings (UGX, ~\$3 USD) in household staples (cooking oil, sugar, salt, soap) in recognition of the time and effort required to participate in the interview.

Interviews were digitally recorded, then transcribed and translated into English by the same RA who had conducted the interview. All transcripts were produced within 72 hours of the interview being completed. The transcripts were reviewed by the first author for quality, content, and to provide feedback to the RAs regarding interviewing techniques. English transcripts were spot-checked against audio recordings by an author (JMA, who is fluent in Runyankore and English) to ensure validity and integrity of translations.

Analysis of Data

A three-step, inductive approach was used to analyze the qualitative data, as follows: (1) development of codes; (2) coding; and (3) category construction. We employed an interpretive phenomenological approach to data analysis[43,44], as the goal of this study was to explore participants' own experiences and perspectives on healthcare engagement.

Development of Codes.

Following an inductive process, interview transcripts were reviewed by the first author (RS) concurrently with data collection to identify an initial set of codes, or labels that described key concepts in the dataset. The inductive strategy provided overlap between qualitative interviewing and data analysis, allowing for iterative engagement with the dataset to identify emerging concepts of interest. As additional transcripts were produced and reviewed, codes were reviewed and refined to fit the data. Using the "constant comparison" method, newly coded text segments were compared to text segments previously marked with the same code to determine if they reflected the same concept[45]. This process was repeated until all transcripts had been reviewed. A final list of codes was produced through discussion and consensus among three co-authors (RS, JMA and RK).

Coding:

All study transcripts were coded, and re-coded when necessary, using the finalized list of codes. QSR NVivo 11 (QRS International Pty Ltd) was used for coding and data organization, but not in development of codes.

Category Construction:

Next, coded data were examined and grouped to form conceptual categories, where data are aggregated based on similarities of meaning. Categories are defined below using text examples. Quotes from participants are shown as italicized and indented.

Interrelationships between categories were identified to create a conceptual framework illustrating factors that influence health behavior in a pluralistic context (Figure 1).

Ethical Statement:

This research was approved by the Human Research Protections Program Institutional Research Board at the University of California, San Diego (#170672), Weill Cornell Medical College (#1803019105), Mbarara University of Science and Technology Research Ethics Committee (#16/01-17) and the Ugandan National Council for Science and Technology (#SS4338). Participants provided written and verbal informed consent in Runyankore.

RESULTS

Characteristics of Participants

Characteristics of study participants appear in Table 1. Over half of the sample had clinical experience with both biomedical and traditional modalities of healthcare.

Characteristic	Traditional healer clients (N=30)	Biomedical clients (N=30)
Report previously receiving care from alternate modality	N=30 (100%)	N=2 (7%)
Age (in years)	30 (median) IQR = 20	28.5 (median) IQR = 10.75
Female gender (%)	N = 16 (53%)	N= 18 (60%)
Primary school education or less	N= 14 (47%)	N = 13 (43%)
Household size (in persons)	5 (median) IQR = 3	4.5 (median) IQR = 3.5
Marital status	Single (N = 7) Married/Cohabiting (N = 21) Widowed (N = 2)	Single (N = 11) Married/Cohabiting (N = 17) Widowed (N = 2)
Christian religion	N = 25 (83%)	N = 23 (77%)
Monthly household income (in USD)	\$41 (median), IQR = 76	\$22 (median) IQR = 46
Type of healer visited on day of enrollment	Spiritualist (N=12) Bonesetter (N=10) Traditional birth attendant (N=4) Herbalist (N=4)	N/A

However, pluralistic behaviors were much more commonly reported among patients of traditional healers. Only two participants recruited from the biomedical clinic reported prior experience receiving care from traditional healers (n=2/30, 7%); in contrast, all (n=30) traditional healer patients reported prior experience receiving biomedical treatment.

Participants recruited from healer practice locations were slightly older, with a higher proportion being married, and with higher reported monthly incomes, compared to the biomedicine group. Biomedical participants were recruited from a government-run medical

clinic, where they received health services at no cost. Therefore, we would expect lower household incomes, as they have preferentially sought to receive free medical care, rather than present to a fee-for-service facility. Other characteristics, including gender, household size, highest level of education, and religious affiliation, were similar between the two groups.

Qualitative Results

Overview

Our qualitative data indicate important perceived advantages and disadvantages to both healthcare modalities, which motivate patient engagement with available resources. We have developed three broad categories representing influences on therapeutic itineraries that were evident in the data. They are summarized as follows: 1) traditional healers

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3 treat patients with “care”; 2) biomedicine uses “modern” technologies; and 3) peer
4 “testimony” influences healthcare engagement. Within each of these categories, we
5 provide examples to illustrate how these factors drive plural healthcare engagement. We
6 consider each one separately, below, and then present a conceptual model for how
7 these factors interrelate to create therapeutic itineraries in southwestern Uganda.
8

9
10 *A. Traditional healers care about their patients*

11 Patients recruited from traditional healers report positive experiences with their care,
12 specifically describing that treatments effectively relieve their symptoms. Participants
13 state that they prefer traditional therapies because traditional practitioners “heal faster”.
14 This efficient healing is sometimes attributed to the fact that traditional practitioners
15 spend more time personally treating and caring for their patients, compared with
16 healthcare workers in biomedical settings:
17

18 *Those [bonesetters] are super! They heal faster than biomedical. When you*
19 *take your patient to a bonesetter, he does not take long to get healed, compared*
20 *to one in the hospital. In hospitals, the healing process is long because they do*
21 *not do much more than hanging you there [in traction] and leave you. You can*
22 *even become lame because they do not check to see whether you are healing or*
23 *not. But for the healer, he does his reviews [checks your wound healing]*
24 *constantly. (Bonesetter patient, female)*
25

26 Patients receiving traditional care also state that they are treated with respect when
27 visiting healers, and that healers are motivated to care for patients, rather than being
28 strictly economically driven. Participants reported that healers attend to patients
29 immediately, even if they did not have money; a few participants stated that healers
30 allowed them to pay for services rendered in installments, or in kind (through farm
31 goods). A participant seeking care from a traditional birth attendant described her
32 preference for traditional healing, emphasizing the kindness of her practitioner:
33

34
35 *[The healer] does everything for you. Her services are excellent. In fact, when*
36 *you deliver [your children] from here, you do not even think of going elsewhere*
37 *another time. She cares so much about her clients. In fact, for all my*
38 *pregnancies, I received antenatal care from this healer. She is my neighbor, and*
39 *instead of going to sit at the hospital the whole day waiting for checkup, I come*
40 *here. She is my neighbor and her services are good. So, I come get my antenatal*
41 *checkup, and go back home to do my chores. (Traditional birth attendant patient,*
42 *female)*
43

44 In contrast, patients describe experiences with biomedicine with narratives of disrespect,
45 mistreatment, neglect or “abuse”. The central message of these biomedical testimonies
46 is that healthcare workers do not care about their patients. In some cases, participants
47 referred to these accounts while explaining why they tend to avoid biomedical facilities.
48 A woman describes her experience receiving antenatal care at the local hospital:
49

50
51 *I came to this hospital for antenatal care and found a nurse who treated me*
52 *badly. She would tell you to lay on the bed and instead of telling you what to do,*
53 *she would shout at you and say, “Don’t face me! Face the other side!” in a loud*
54 *voice, and you wonder what the problem was. She embarrassed me and I felt*
55 *ashamed. I promised myself never to return in this hospital She would only*
56 *shout at us. She was horrible. (Biomedical patient, female)*
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4 A number of participants describe experiences at biomedical facilities where they are
5 never attended to by biomedical staff, despite waiting for many hours – sometimes
6 spending the entire day without receiving medical attention. These hours spent waiting
7 come at the expense of childcare, household duties and income-generating activities.
8 One man describes his experience seeking biomedical care for a toothache as follows:
9

10
11 *I went to the referral hospital and spent there the whole day without treatment.*
12 *The following morning, when I went back, I was given only Panadol*
13 *[Acetaminophen]. I felt so sad. (Biomedical patient, male)*

14
15 Another patient states that he gave up after waiting all day for a voluntary circumcision
16 procedure:
17

18 *You reach there and sit for the whole day without treatment. Drugs are never*
19 *there and health workers do not attend to patients as it should be. They arrive at*
20 *work late and leave work early. They are really bad. I went [to the clinic] one time*
21 *for circumcision and sat there for many hours until I got hungry and gave up. I left*
22 *without seeing any doctor. (Bonesetter patient, male)*
23

24 B. Biomedicine uses modern technologies to heal

25 Participants state that biomedical care is preferred in instances where “modern”
26 technologies can be utilized to provide a diagnosis for one’s symptoms, and guide
27 treatment. Through blood and radiological tests, healthcare providers can identify the
28 specific cause of a patient’s illness, and provide appropriate care. Patients perceive that
29 the information generated by biomedical technology validates the therapies administered
30 to them:
31

32
33 *They use machines to diagnose and test for conditions. They give the right*
34 *medical information. (Biomedical patient, male).*
35

36 Having received a specific diagnosis, participants also believe that the treatment
37 recommended by healthcare workers will be effective in alleviating their symptoms. For
38 example, one participant described how appropriate medicines have the capacity to
39 heal, even if taken in small amounts:
40

41 *When you come [to the clinic] you get diagnosed and they write for you a*
42 *prescription and you get the medicine then their service is good ... Even if you*
43 *get very little medicine from them and take it, you get healed. (Biomedical*
44 *patient, female)*
45

46 Another patient explains why the capacity to intervene with modern biomedical
47 technology is more effective in treating symptoms than traditional medicine:
48

49 *Biomedical facilities are good ... when you are, for instance, in a critical*
50 *condition, they can put you on life support machines, or they can put you on a*
51 *drip. They can also give you tablets and injections that can help you. Traditional*
52 *healers can't manage something like that. They don't have modern equipment.*
53 *They don't have tablets, and they don't have drips and injections. (Bonesetter*
54 *patient, male)*
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3 Results from biomedical testing guide what some participants describe as “proper”,
4 effective treatment, compared with traditional healing where therapies are provided in
5 the absence of any diagnostic testing:
6

7 *[Biomedical facilities] diagnose you and inform you of the ailment that you are*
8 *suffering from, and at times inform you that your health is okay ... When you visit*
9 *biomedical health facilities they diagnose you and inform you of your results and*
10 *in case you are HIV positive, you can start on medicine ... [Traditional healers]*
11 *don't have equipment to diagnose, so how do they diagnose for conditions? ... I*
12 *don't trust them. (Biomedical patient, Female)*
13

14
15 While biomedicine is favored for its use of diagnostic technologies, other participants
16 describe preference for traditional healing *specifically because* these approaches could
17 enable avoidance of biomedical procedures, which participants describe as
18 “unnecessary” and having high morbidity and mortality. Participants state that an
19 advantage of traditional healing is that it supports the body to heal “naturally”, rather
20 requiring modern, invasive interventions. Participants report seeking traditional care after
21 having been told by biomedical providers that they would require an operation in order to
22 recover. Those who ultimately healed after receiving traditional care declared that
23 biomedical providers rush to use modern technologies, instead of allowing the body to
24 heal on its own. One patient describes his experience receiving care from a bonesetter,
25 after suffering severe extremity fractures after falling from a motorcycle:
26

27 *[The hospital staff] told me that the doctors will cut off my leg because it was*
28 *badly injured and that there was no way they could fix it ... When we reached*
29 *[this healer], they told me that the bone that joins the knee was broken but*
30 *promised that since I was in that place, in two to three weeks, I will be able to*
31 *walk again. They then aligned my leg and started the treatment ... I am now*
32 *getting better. If I had remained at the hospital, I know my leg would have been*
33 *cut off by now. (Bonesetter patient, male)*
34

35
36 Another patient describes how effective treatment from an herbalist allowed her sister to
37 avoid a Caesarean section with her twin pregnancy:
38

39 *These healers are very useful ... my elder sister had a problem with her twin*
40 *pregnancy. She was stuck with the pregnancy because the babies could not*
41 *move. They took her to one of the traditional healers and was given medicine*
42 *which helped her so much and she delivered her babies without difficulties. We*
43 *thought she would be operated on while giving birth [via Caesarean section]*
44 *because the doctors at referral hospital had told her that she will not manage to*
45 *push and advised her to go for an operation, which did not happen because of*
46 *the medicine the healer gave her. (Spiritual healer patient, female)*
47

48
49 Participants described fear of utilizing biomedical facilities to deliver their children, as
50 they believed that physicians would perform unnecessary Caesarian sections,
51 considered a high-risk procedure for both mothers and infants:
52

53 *[Doctors] rush women to the operating theatre when it's not necessary. Many*
54 *women and babies have lost their lives due to the negligence of doctors. Women*
55 *fear to deliver from hospital. (Spiritual healer patient, male)*
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C. Peer “testimony” influences healthcare engagement

Our participants recount social narratives, or “testimonies” which describe healthcare experiences among peers within their communities. These discursive events evaluate a provider’s competence and effectiveness in addressing ailments, and describe negative or positive outcomes of treatments. Participants indicate that peer testimonies strongly influence where they choose to seek care for their symptoms. We found that biomedical narratives frequently reinforced individual reports of mistreatment; in contrast, narratives about traditional healing were generally positive and affirmed the “real” nature of this form of healthcare.

Numerous participants who received care from traditional healers describe negative peer narratives about biomedicine. A participant describes the testimony from his neighbor that influenced his decision to seek care from a traditional bonesetter:

My neighbor reached [the referral hospital after injuring his leg], but nothing much was done. They made him sit on the waiting bench and the doctor told the caretaker to go and buy a bandage and find an empty box. The doctor then dismantled the box and tied it on the leg using the bandage and left him there. He remained there until morning. He never got any treatment [for the leg injury] apart from the empty boxes they tied on the leg. I will never forget what he experienced from the referral hospital. It was so bad and so discouraging. Health workers do not care about patients. (Bonesetter patient, male)

A number of participants recalled community narratives indicating that healthcare workers would intentionally withhold treatment or harm their patients. One woman seeking care at a traditional birth attendant practice describes stories that made her fear that she would be harmed at the hands of healthcare workers:

There was a woman in labor who was supposed to be taken to the operating theatre but the nurses asked her for money, which she did not have. They refused to work on her until other patients contributed some money and gave it to the nurses ... Those nurses do not mind whether you die from there or not ... There is also one mother I heard about who took her child for immunization and got an argument with the nurse. Intentionally the nurse gave the child overdose and the child died. Some of these health workers are so wicked. (Herbalist patient, female)

Negative peer testimonies were not limited to patients of healers. For example, one woman seeking biomedical care told a story about her neighbor suffering mistreatment at the same facility.

My pregnant neighbor delivered her baby in the village compound. [When they arrived at this hospital for post-partum care], the nurse abused her, saying that she should take her stupidity back to her village. They do not care. (Biomedical patient, female).

In stark contrast to narratives surrounding biomedical care, peer testimony surrounding traditional healing is largely positive. Healers are lauded for their effective care, and patients are guided by peer testimonials in selecting which healer to visit for their ailments. One participant seeking care at a traditional herbalist describes the impact of peer endorsements on her decision to seek care from this particular healer:

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3
4 *This healer is popular and well known, and wherever you go, people will*
5 *recommend her to treat your sick child ... I have seen so many different people*
6 *come here to receive treatment ... I am impressed. (Spiritual healer patient,*
7 *male).*
8

9
10 A central concept in many testimonies about traditional medicine is the genuineness of
11 the healer, and how they should be set apart from traditional healers who may be “fake”
12 or “quacks”. One participant describes how testimonies from peers with similar injuries
13 directed him to seek care from a specific bonesetter, and how testimonies generate
14 more patients for particular healers:
15

16 *Most traditional healers are quacks, and personally I don't trust them.*
17 *[Interviewer: Then how do you know that you will heal from this treatment?]*
18 *I get the confidence from other people who have been treated here. There is a*
19 *man from a nearby dairy. He bones were more severely broken than mine, but*
20 *he healed from here, and is now doing his work. I have heard many people's*
21 *testimonies that they have been healed from here ... When I come here and get*
22 *healed, I will direct another one because he will be healed too and that person*
23 *will also direct others... A healer who is real does not need to advertise on the*
24 *radios because the people they heal create market for them. (Bonesetter patient,*
25 *male)*
26

27 *D. Conceptual Model*

28 Figure 1 presents a conceptual model integrating our findings to show how influences at
29 the healthcare provider, healthcare system, and peer levels influence individual
30 engagement with healthcare in pluralistic settings. These variables interact to shape an
31 individual's therapeutic itinerary, but not necessarily in a stepwise manner. For
32 healthcare users, one or more characteristics of a healthcare system may be of
33 paramount importance in determining use of this resource, but each modality comes with
34 potential disadvantages. Negative experiences could prompt users to switch to the
35 alternate modality. We heard this process described by participants who believed their
36 ailments were initially mismanaged by biomedical providers, and were subsequently
37 healed using traditional approaches. Similarly, positive experiences contribute towards
38 continued use of a healthcare modality, and an individual may become reticent to
39 engage with the alternative in light of continued positive health outcomes.
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42 **DISCUSSION**

43 This study identified variables that drive engagement with healthcare resources in a
44 medically pluralistic setting, and identified three central factors that contribute to
45 therapeutic pluralism. These may be summarized as follows: 1) traditional healers care
46 about their patients, while biomedical providers do not; 2) biomedical technologies can
47 provide diagnosis and guide treatment, but these technologies are sometimes
48 intentionally avoided; and 3) peer testimonies influence healthcare utilization, largely in
49 favor of traditional healing. These can be considered conceptually as factors operating at
50 the healthcare provider, healthcare system, and peer levels (Figure 1).
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53 Our work illustrates how healthcare provider characteristics are of central importance to
54 patients. The quality of interpersonal interactions can either motivate or deter
55 engagement with healthcare services. We found that patient-provider interactions with
56 traditional healers are described as generally respectful and supportive, while patient-
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3 provider interactions in biomedical contexts included narratives of neglect and “abuse”.
4 These findings align prior work showing that initial choice of therapeutic modality in
5 pluralistic contexts is driven by perceived trustworthiness of a healthcare provider[22,46-
6 49]. Our participant accounts of negative interactions with biomedical staff are congruent
7 with prior work linking negative interactions with disengagement with HIV care among
8 people living with HIV[4-6], decreased HIV pre-exposure prophylaxis (PrEP) utilization
9 among key populations[7] and lack of healthcare facility use among pregnant women[8-
10 10].
11

12 We also describe how some characteristics of the available healthcare systems impact
13 healthcare engagement. Our results speak to the hegemony of biomedicine in Uganda,
14 and more broadly throughout post-colonial sub-Saharan Africa, where biomedicine is
15 highly valued, and may be considered of superior quality and efficacy compared with
16 traditional healing[11,12]. Some participants report gaining reassurance through
17 laboratory and radiologic testing to guide diagnosis and therapy, describing this as
18 “proper” treatment. We note that the desire for healthcare directed by “modern” test
19 results is the central factor favoring biomedical healthcare utilization among our
20 participants. Interestingly, other data from high-resource contexts has shown that
21 diagnostic test results do not increase patient reassurance or decrease health-related
22 anxiety in outpatient biomedical settings[50,51]. However, in our medically pluralistic
23 study site, the capacity of biomedical facilities to perform diagnostic testing is distinctive
24 in contrast to traditional medicine approaches, and therefore some patients consider
25 access to testing as a benefit.
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28 Traditional healthcare is sometimes preferred as a means to avoid invasive procedures,
29 such as orthopedic fixation, limb amputation, or Caesarean section. Our findings are
30 congruent with prior research demonstrating avoidance of facility-based obstetric
31 services, preference for traditional home birth[10,36,52], and bonesetters to heal
32 orthopedic injuries in sub-Saharan Africa[53,54]. Motivation to avoid invasive operative
33 procedures is further explained by poor post-operative outcomes throughout sub-
34 Saharan Africa[55]. For example, maternal mortality after Caesarean section is fifty
35 times higher in Africa compared with high income countries[56]. As such, patients
36 consider invasive biomedical procedures high risk, and seek to avoid them through
37 receipt of traditional therapies.
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40 Additionally, we note that the content of peer testimonies strongly influences patients’
41 decisions to utilize traditional or biomedical care. Peer influences have been shown to
42 have strong impact on individual healthcare engagement in the cases of HIV services
43 utilization[57-59], adolescent health[60,61], mental health[62], and substance
44 misuse[63], for example. Our study shows how peer testimonies serve as endorsements
45 of traditional healing, legitimizing its use through descriptions of clinical effectiveness. In
46 contrast, largely negative narratives regarding biomedicine potentiate avoidance of these
47 facilities and services.
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49 Our findings provide insight on how patients decide to engage with particular healthcare
50 resources, and can guide efforts to improve healthcare quality and interventions in
51 medically pluralistic communities. Importantly, our conceptual model can direct
52 strategies to engage those who may avoid biomedical resources, and have low uptake
53 of conventional healthcare outreach program, which are frequently facility-based, and/or
54 delivered by biomedical providers. Our data suggest that healthcare users value the
55 interpersonal interactions and trustworthiness of healers, but also may gain reassurance
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3 through receipt of biomedical testing and diagnostic technologies. An ideal health
4 resource in a pluralistic context would potentially incorporate all of these valuable
5 attributes. Traditional healers in Ghana have taken this approach, utilizing components
6 of biomedical knowledge through reference to medical textbooks and “Google” [64].
7 Similarly, we know of healers in Mbarara District who use glucometers, blood pressure
8 cuffs, and performed commercially available rapid diagnostics tests for HIV and malaria.
9 Our data suggest that decentralized healthcare services would be highly acceptable
10 among pluralistic communities. An example of this approach at the national health policy
11 level is demonstrated in the case of “differentiated care” for PLHIV[20], where service
12 delivery is tailored to the needs of PLHIV in their communities, and biomedical facility
13 visits are minimized.
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16 Finally, our data contribute to a body of work that emphasizes the important role of
17 traditional healers within the communities they serve. We hope our findings explain the
18 persistent appeal of traditional medicine, and demonstrate that pluralistic behavior
19 should be considered more than ‘an inconvenient truth’ for biomedical providers,
20 researchers and policy makers. Low biomedical engagement in pluralistic settings
21 should not simply be attributed to lack of access to formal resources, but should be
22 considered an individual’s informed healthcare choice. We recommend that researchers
23 and policy makers involve traditional healers when designing and implementing
24 community-based health initiatives because healers are well positioned allies for
25 healthcare programs. Community members may consider healers more trustworthy than
26 biomedical providers[49]. Biomedicine could learn a great deal from healers regarding
27 the power of interpersonal relationships as part of the healthcare process[13,14]. For
28 example, Moshabela et. al. (2016) considered the roles of traditional healers in the
29 context of a community-wide HIV testing and treatment intervention. They found that
30 healers boosted impact and acceptability of the intervention through educating clients on
31 HIV-related stigma and supporting linkage to HIV care[19].
32

33
34 Many studies have shown that healers are interested in working with biomedical
35 providers to improve health outcomes for their patients[29,65,66]. However, the
36 converse is not typically the case. Biomedical objections to traditional healing largely
37 focus on use of alternatively explanatory mechanisms (such as belief that evil spirits or
38 bad luck may cause physical symptoms), lack of standardized training and oversight of
39 practices, and delivery of varying concentrations or mixtures of herbal therapies[15]. In
40 fact, negative attitudes towards traditional medicine have been described as the primary
41 barrier to true collaboration between traditional and biomedicine, as biomedical providers
42 repeatedly downplay the skills and contributions of traditional healers[16,17]. Biomedical
43 providers may express distrust and disapproval of traditional medicine in interactions
44 with their patients[16-18]. Related to this lack of trust is the observation that our
45 participant groups reported markedly different experiences with pluralistic healthcare
46 utilization. Most biomedical participants denied prior use of traditional medicine, while
47 most traditional medicine users reported having previously sought biomedical care. This
48 difference in self-reporting is likely an example of a well described phenomenon, where
49 patients are reticent to disclose traditional medicine use in the context of receiving
50 biomedical care[18,67,68]. Therefore, we suspect that participants seeking care in the
51 biomedical context under-reported traditional medicine use due to fear of social
52 judgement.
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55 There are a few limitations of this study. We acknowledge that baseline characteristics of
56 participants recruited from traditional healer practices are different than those recruited
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3 from an outpatient biomedical practice. Qualitative samples are intended to be relevant
4 to the research question, and may not be representative, as would be prioritized in a
5 quantitative study. We did not record medical histories for our participants, and cannot
6 speak to how particular diagnoses may motivate to healthcare itinerary, beyond the
7 symptoms prompting the current visit. This study includes only people seeking
8 healthcare from traditional healers, and similar work is needed for those seeking care
9 from faith healers. Further, we acknowledge the potential impact of social judgement and
10 recognize that some biomedical participants may have been reticent to share positive
11 feelings about traditional medicine during their interviews. Last, our qualitative data
12 indicate multiple directions for future research. For example, what are strategies to
13 facilitate bidirectional cooperation between traditional and biomedical systems? How
14 would one design and implement a decentralized healthcare initiative in cooperation with
15 traditional healers?
16

17 **CONCLUSIONS**

18 Patients perceive clear advantages and disadvantages to biomedical and traditional care
19 in medically pluralistic settings. We identified factors at the healthcare provider,
20 healthcare system, and peer levels which can influence patients' therapeutic itineraries,
21 and illustrate why traditional medicine is sometimes preferred. Our findings can inform
22 community-based, public health interventions in medically pluralistic contexts, and
23 underscore the importance of recognizing and engaging with traditional healers as
24 important stakeholders in community health.
25

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30
31

32 **CONTRIBUTORSHIP STATEMENT**

33 RS conceived of the study. RK and JMA provided input on study design, study
34 procedures. RS and JMA oversaw data collection. RS was primarily responsible for data
35 analysis, with input from JMA, RK and NW. RS composed the first draft of the
36 manuscript. All authors provided input and approve of the final submission.
37
38

39 **COMPETING INTERESTS**

40 The authors declare no competing interests.
41

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45 The study funder did not have any role in the study design, collection, analysis,
46 interpretation of data, nor in the decision to submit the article for publication. All authors
47 are independent from the funders, and had full access to all of the data. All authors take
48 responsibility for the integrity of the data and accuracy of the data analysis.
49

50 **DATA SHARING STATEMENT**

51 Deidentified data may be shared upon reasonable request by emailing the first author.
52
53

54 **PATIENT AND PUBLIC INVOLVEMENT STATEMENT**

55 Patients were included as participants in this study. They did not directly participate in
56 the design or implementation of the study, as the purpose of the study was to elicit
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3 patient perspectives on community healthcare resources. Results of this study were
4 used to guide development of a study community advisory board, which includes
5 patients and other stakeholders, including healthcare providers, traditional healers and
6 community leaders.
7

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FIGURE CAPTION

38 Figure 1. Conceptual model showing key factors within various levels (healthcare
39 provider, healthcare system, peer) influencing individual health behavior within medically
40 pluralistic contexts. Each factor differentially influences an individual's therapeutic
41 itinerary. Negative factors may motivate a switch to the other modality, and positive
42 factors contribute towards continued use of a particular healthcare modality. This model
43 is not inclusive of all variables that influence health engagement, but illustrates
44 categories that were described by our participants in driving their healthcare decision
45 making, specifically regarding decisions to utilize traditional or biomedical care.
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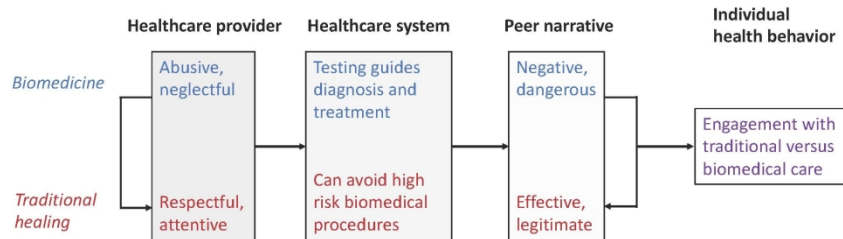


Figure 1. Conceptual model showing key factors within various levels (healthcare provider, healthcare system, peer) influencing individual health behavior within medically pluralistic contexts. Each factor differentially influences an individual's therapeutic itinerary. Negative factors may motivate a switch to the other modality, and positive factors contribute towards continued use of a particular healthcare modality. This model is not inclusive of all variables that influence health engagement, but illustrates categories that were described by our participants in driving their healthcare decision making, specifically regarding decisions to utilize traditional or biomedical care.

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Page/line no(s).

Title and abstract

<p>Title - Concise description of the nature and topic of the study Identifying the study as qualitative or indicating the approach (e.g., ethnography, grounded theory) or data collection methods (e.g., interview, focus group) is recommended</p>	1
<p>Abstract - Summary of key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results, and conclusions</p>	2

Introduction

<p>Problem formulation - Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement</p>	3-4
<p>Purpose or research question - Purpose of the study and specific objectives or questions</p>	4

Methods

<p>Qualitative approach and research paradigm - Qualitative approach (e.g., ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g., postpositivist, constructivist/ interpretivist) is also recommended; rationale**</p>	6
<p>Researcher characteristics and reflexivity - Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, and/or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, and/or transferability</p>	6
<p>Context - Setting/site and salient contextual factors; rationale**</p>	4-5
<p>Sampling strategy - How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g., sampling saturation); rationale**</p>	4-6
<p>Ethical issues pertaining to human subjects - Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues</p>	7
<p>Data collection methods - Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/methods, and modification of procedures in response to evolving study findings; rationale**</p>	6

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3	Data collection instruments and technologies - Description of instruments (e.g.,	
4	interview guides, questionnaires) and devices (e.g., audio recorders) used for data	
5	collection; if/how the instrument(s) changed over the course of the study	5-6
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7	Units of study - Number and relevant characteristics of participants, documents,	
8	or events included in the study; level of participation (could be reported in results)	7
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10	Data processing - Methods for processing data prior to and during analysis,	
11	including transcription, data entry, data management and security, verification of	
12	data integrity, data coding, and anonymization/de-identification of excerpts	6-7
13		
14	Data analysis - Process by which inferences, themes, etc., were identified and	
15	developed, including the researchers involved in data analysis; usually references a	
16	specific paradigm or approach; rationale**	6-7
17		
18	Techniques to enhance trustworthiness - Techniques to enhance trustworthiness	
19	and credibility of data analysis (e.g., member checking, audit trail, triangulation);	
20	rationale**	6

Results/findings

23	Synthesis and interpretation - Main findings (e.g., interpretations, inferences, and	
24	themes); might include development of a theory or model, or integration with	
25	prior research or theory	8-12
26		
27	Links to empirical data - Evidence (e.g., quotes, field notes, text excerpts,	
28	photographs) to substantiate analytic findings	8-12
29		

Discussion

32	Integration with prior work, implications, transferability, and contribution(s) to	
33	the field - Short summary of main findings; explanation of how findings and	
34	conclusions connect to, support, elaborate on, or challenge conclusions of earlier	
35	scholarship; discussion of scope of application/generalizability; identification of	
36	unique contribution(s) to scholarship in a discipline or field	12-15
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38	Limitations - Trustworthiness and limitations of findings	15
39		

Other

42	Conflicts of interest - Potential sources of influence or perceived influence on	
43	study conduct and conclusions; how these were managed	16
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45	Funding - Sources of funding and other support; role of funders in data collection,	
46	interpretation, and reporting	16
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*The authors created the SRQR by searching the literature to identify guidelines, reporting standards, and critical appraisal criteria for qualitative research; reviewing the reference lists of retrieved sources; and contacting experts to gain feedback. The SRQR aims to improve the transparency of all aspects of qualitative research by providing clear standards for reporting qualitative research.

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**The rationale should briefly discuss the justification for choosing that theory, approach, method, or technique rather than other options available, the assumptions and limitations implicit in those choices, and how those choices influence study conclusions and transferability. As appropriate, the rationale for several items might be discussed together.

Reference:

O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. **Standards for reporting qualitative research: a synthesis of recommendations.** *Academic Medicine*, Vol. 89, No. 9 / Sept 2014
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3 **A conceptual model for pluralistic healthcare behavior: results from a qualitative**
4 **study in southwestern Uganda**
5

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ABSTRACT

Introduction: *Medical pluralism*, or concurrent utilization of multiple therapeutic modalities, is common in various international contexts, and has been characterized as a factor contributing to poor health outcomes in low-resource settings. Traditional healers are ubiquitous providers in most regions, including the study site of southwestern Uganda. Where both informal and formal healthcare services are both available, patients do not engage with both options equally. It is not well understood why patients choose to engage with one healthcare modality over the other. The goal of this study was to explain therapeutic itineraries and create a conceptual framework of pluralistic health behavior.

Methods: In-depth interviews were conducted from September 2017 – February 2018 with patients seeking care at traditional healers (N=30) and at an outpatient medicine clinic (N=30) in Mbarara, Uganda; the study is nested within a longitudinal project examining HIV testing engagement among traditional healer-utilizing communities. Inclusion criteria included age ≥ 18 years, and ability to provide informed consent. Participants were recruited from practices representing the range of healer specialties. Following an inductive approach, interview transcripts were reviewed and coded to identify conceptual categories explaining healthcare utilization.

Results: We identified three broad categories relevant to healthcare utilization: 1) traditional healers treat patients with “care”; 2) biomedicine uses “modern” technologies; and 3) peer “testimony” influences healthcare engagement. These categories describe variables at the healthcare provider, healthcare system, and peer levels that interrelate to motivate individual engagement in pluralistic health resources.

Conclusions: Patients perceive clear advantages and disadvantages to biomedical and traditional care in medically pluralistic settings. We identified factors at the healthcare provider, healthcare system, and peer levels which influence patients’ therapeutic itineraries. Our findings provide a basis to improve health outcomes in medically pluralistic settings, and underscore the importance of recognizing traditional healers as important stakeholders in community health.

Keywords: Medical pluralism, Uganda, traditional healers, qualitative

STRENGTHS AND LIMITATIONS OF THIS STUDY

- This study illuminates factors that motivate engagement with healthcare resources by using data from biomedical and traditional medicine utilizers
- This study employed qualitative methods to explore participants' own experiences of healthcare modalities, and identify perceived advantages and disadvantages of each form of healing
- While the data gathered is highly contextual and specific to the study context, the conceptual model presented offers a broad application to other medically pluralistic communities
- This conceptual model could be used to guide healthcare initiatives, policies, and research in pluralistic settings

INTRODUCTION

Medical pluralism, or utilization of multiple therapeutic modalities, is common where both biomedical and complementary or alternative treatments are available to patients. This pattern of healthcare engagement is observed in both high-[1-3] and low-resource settings[4-6], and is well described for patients with both acute[7] and chronic illness[8-10] in various international contexts. In low- and middle-income countries, complementary and alternative healthcare services are often provided by traditional healers, who practice outside of the formal biomedical system. Traditional healers are broadly defined by the World Health Organization as: 1) persons recognized by local community as healers; 2) having regular patient attendance; and 3) having space to receive and treat patients[11,12]. They “provide health care by using plant, animal and mineral substances, and other methods based on social, cultural, and religious practices”[13,14]. It is estimated that 80% of the population in sub-Saharan Africa visit traditional healers[15].

As such, traditional healers are an initial point of contact for patients in medically pluralistic settings. Patients may prefer informal health services from traditional healers because of their increased accessibility: healers are present in higher numbers than physicians and biomedical facilities, particularly in low-resource settings[16,17]. However, their popularity cannot be strictly explained by convenience. Research in urban regions having high density of biomedical institutions demonstrates similar reliance on traditional healers[16-18]. Patients may also seek out traditional therapies to address symptoms attributed to ancestral curses or bewitching, believed incurable by biomedicine[19]. Use of traditional medicine is also strongly tied to local religious and ethnic identities[20]. Patients may pursue traditional healing in the setting of biomedicine treatment “failure”, when symptoms worsen or persist despite ongoing therapies[21,22].

Prior research has shown that traditional healer use is a factor contributing to poor health outcomes among patients. For example, receiving care from a traditional healer has been shown to delay HIV testing and antiretroviral therapy (ART) initiation[23], and interrupt HIV treatment[22] for people living with HIV (PLHIV). In Mozambique, PLHIV initially seeking care from traditional healers experienced significantly longer delays to diagnosis compared with those who did not utilize healers; this delay exponentially grew with corresponding increases in the number of healers consulted prior to receiving HIV testing[23]. In South Africa, medical pluralism was shown to be negatively associated with ART use in a cohort of PLHIV[24]. Use of traditional healers was also identified as an important variable contributing to the recent Ebola outbreak in West Africa[25]. Studies have demonstrated that medical pluralism similarly contributes to poor outcomes

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3 for non-infectious diseases, such as nonadherence to chemotherapy for cancer[26,27],
4 or poor outpatient linkage to care for patients with hypertension[28].
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6 Because they are frequently consulted for most types of illness, traditional healers could
7 be important allies for public health initiatives. Some programs have attempted to
8 engage with healers for these purposes, which have included trainings for healers to
9 deliver counseling and facility referral for HIV[29,30], TB[31], or malaria testing[32], or to
10 increase uptake of prenatal care[33]. However, in most cases, program effectiveness
11 has been limited by the fact that patients may not complete referrals to facilities. These
12 findings highly the fact that where both informal and formal healthcare services are
13 available, patients do not engage with both options equally.
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15
16 There remains a critical lack of understanding about why patients choose to utilize one
17 healthcare resource, but not another. It is clear that biomedicine and traditional healing
18 offer distinctive forms of healthcare for patients. But there is a dearth of knowledge on
19 perceived advantages and disadvantages of each modality from the perspective of the
20 healthcare user. Without this information, healthcare initiatives in pluralistic settings
21 cannot be truly “patient-centered”, and are at risk for failure. The goal of this study was
22 to identify factors that motivate engagement with healthcare resources, using qualitative
23 research methods. We sought to explain therapeutic itineraries by conducting interviews
24 with users of biomedical and traditional healthcare resources. These data were used to
25 develop a general, conceptual framework that can inform future work in medically
26 pluralistic settings.
27

28 **METHODS**

29 **Study Setting and Design**

30
31 This qualitative study was conducted in Mbarara District, Uganda, a rural district of
32 418,000 residents located ~275 km southwest of the capital city of Kampala.
33 Southwestern Uganda is a medically pluralistic context, where both traditional and
34 biomedical modalities of healthcare co-exist[34-36]. In this region of sub-Saharan Africa,
35 traditional healers practice herbalism and spiritual healing; they also set broken bones
36 and attend births in the community. Spiritual healers attribute their powers to the
37 *Bachwezi*, which are believed to be ancestral spirits from an ancient kingdom that
38 previously occupied this region of eastern Africa[37,38]. In Uganda, traditional healing is
39 not formally recognized by the Ministry of Health; there is no centralized oversight of
40 traditional healing training programs or services. This research was conducted as part of
41 a multi-year, mixed methods study of HIV services engagement in a medically pluralistic
42 community.
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45 **Sampling and Recruitment**

46 Following a purposive sampling strategy, sixty (N=60) adults were identified to
47 participate as key informants in this study, or “individuals that are especially
48 knowledgeable about or experienced with a phenomenon of interest”[39]. In our case,
49 key informants were selected to represent variation in experiences of receiving
50 modalities of healthcare: biomedical and traditional. That is, participants were patients
51 representing two subgroups: (1) individuals receiving treatment from traditional healers
52 (N=30), and (2) individuals receiving treatment from a biomedical general medicine
53 outpatient clinic (N=30). Inclusion criteria for all participants were: 1) age ≥18 years; 2)
54 ability to provide informed consent; and 3) seeking healthcare at either a traditional
55 healer or outpatient biomedical clinic in Mbarara District.
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4 Both verbal and written informed consent were obtained by Ugandan research
5 assistants (RAs) prior to enrollment. After verbally reviewing the consent form, research
6 staff used a 5-item questionnaire to assess whether the potential participant understood
7 the study and consent process. This questionnaire posed questions critical to
8 demonstrating consent, such as “How much time will this take you?”; “What are the
9 possible benefits for you?”. If a potential participant demonstrated errors in
10 understanding, these were corrected, and potential participants asked if they needed
11 further clarification. If, after further attempts to clarify misunderstandings, study staff
12 determined that the potential participant did not comprehend the consent process, or
13 critical aspects of the study, they were not enrolled.
14

15
16 Participants in the traditional medicine subgroup were recruited from twelve traditional
17 healer practices which reflected the range of specialties in this region (herbalist, bone
18 setter, traditional birth attendant, and spiritual healer). All were located within 20
19 kilometers of Mbarara town center. It is well established that men tend to have low
20 uptake of in healthcare services in sub-Saharan Africa[1-3]. In order to ensure that male
21 perspectives were represented, we recruited two-thirds of participants at healer practices
22 who were known to provide services for men. Therefore, more bonesetter and spiritual
23 healer patients are included in the traditional healer group. For the purposes of this
24 study, we excluded Christian-based spiritual healers (i.e., “Born Again” or Pentecostal
25 ministers). Participants in the biomedical subgroup were recruited from Mbarara
26 Municipality Clinic, a general outpatient government-run clinic in the town of Mbarara,
27 which serves approximately 50,000 patients per year. Services at this clinic are provided
28 free of charge.
29

30
31 At both traditional and biomedical facilities, RAs approached patients following
32 completion of visits to assess eligibility and interest in participation. Potential participants
33 were individually recruited by RAs, who visited recruitment sites once per week during
34 business hours to screen for eligible patients. Recruitment visits were scheduled on
35 random days of the week to maximize variation of participants included in this study. A
36 maximum of two participants was enrolled during each site visit in order to allow ample
37 time to review informed consent and conduct minimally-structured interviews. This
38 approach ensured interview quality, and was central to the inductive data analysis
39 process by providing time to review interview content, provide feedback to RAs, and
40 identify preliminary codes (see “Data Collection” and “Analysis of Data” sections for
41 more details). Biomedical clinic leadership and traditional healers gave permission for
42 study staff to recruit patients at their practices. Recruitment was carried out over a period
43 of six months (September 2017 - February 2018).
44

45
46 A target sample size of 30 participants per subgroup was guided by prior research
47 suggesting that a range between 20 and 30 interviews is adequate to reach *thematic*
48 *saturation*, the point at which no new concepts emerge from subsequent interviews[40-
49 42]. After 30 interviews per group were conducted, the study authors agreed that
50 thematic saturation had been reached, and interview content no longer contained new or
51 surprising content.
52

53 **Data Collection**

54 Three Ugandan Research Assistants (RAs) with prior experience in conducting
55 qualitative interviews in southwestern Uganda collected data for this study. Prior to
56 initiation of data collection, all RAs took part in a three-day training session led by RS
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3 and JMA, which focused on the principles of qualitative research, approaches to
4 conducting high quality interviews, and establishing standard procedures for interview
5 translation and transcription. In addition, the RAs underwent intensive training with
6 interview guide questions to ensure consistency of delivery and use throughout the
7 study.
8

9
10 Each study participant took part in a single, individual, in-depth interview with one of
11 these RAs. Interviews were conducted following an interview guide that included the
12 following topics: 1) details of the patient's therapeutic itinerary for his/her current
13 symptoms; 2) symptoms that motivated him/her to seek healthcare; 3) attitudes towards,
14 and experiences with, traditional and biomedicine; and 4) details of concurrent or recent
15 biomedical and traditional healer visits. The interview guide was created in English,
16 translated to the local language (Runyankore), and back-translated into English to verify
17 preservation of meaning. In addition, the interview guide was piloted with three
18 traditional healers prior to initiation of data collection in August 2017; these responses
19 were not included in our analysis.
20

21 Interviews lasted approximately one hour and were conducted in the local language
22 (Runyankore), in private locations at either healer practices or at the participating
23 biomedical clinic. Participants received the equivalent of 10,000 Ugandan Shillings
24 (UGX, ~\$3 USD) in household staples (cooking oil, sugar, salt, soap) in recognition of
25 the time and effort required to participate in the interview.
26

27 Interviews were digitally recorded, then transcribed and translated into English by the
28 same RA who had conducted the interview. All transcripts were produced within 72
29 hours of the interview being completed. The transcripts were reviewed by the first author
30 for quality, content, and to provide feedback to the RAs regarding interviewing
31 techniques. This monitoring process allowed for RAs to receive consistent feedback to
32 improve interviewing skills to ensure that interviews were of high quality, explored
33 participants unique experiences, and facilitated consistency on interview guide topics
34 across interviewers. English transcripts were spot-checked against audio recordings by
35 an author (JMA, who is fluent in Runyankore and English) to ensure validity and integrity
36 of translations.
37

38 39 **Analysis of Data**

40 A three-step, inductive approach was used to analyze the qualitative data, as follows: (1)
41 development of codes; (2) coding; and (3) category construction. We employed an
42 interpretive phenomenological approach to data analysis[43,44], as the goal of this study
43 was to explore participants' own experiences and perspectives on healthcare
44 engagement.
45

46 **Development of Codes.**

47 Two authors (RS and JMA) reviewed transcripts within 72 hours of completion and
48 corresponded weekly to identify and discuss emerging concepts. Guided by these
49 discussions, the first author (RS) produced an initial set of codes, or labels that
50 described key concepts in the dataset. Using an inductive strategy, this process was
51 conducted while interviews were ongoing, providing overlap between qualitative
52 interviewing and data analysis, allowing for iterative engagement with the dataset to
53 identify concepts of interest. As additional transcripts were produced and reviewed,
54 codes were reviewed and refined to fit the data. Using the "constant comparison"
55 method, newly coded text segments were compared to text segments previously marked
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with the same code to determine if they reflected the same concept[45]. This process was repeated until all transcripts had been reviewed. A final list of codes was produced through discussion and consensus among three co-authors (RS, JMA and RK).

Coding:

All study transcripts were coded, and re-coded when necessary, using the finalized list of codes. QSR NVivo 11 (QRS International Pty Ltd) was used for coding and data organization, but not in development of codes.

Category Construction:

Next, coded data were examined and grouped to form conceptual categories, where data are aggregated based on similarities of meaning. Categories are defined below using text examples. Quotes from participants are shown as italicized and indented. Interrelationships between categories were identified to create a conceptual framework illustrating factors that influence health behavior in a pluralistic context (Figure 1).

Ethical Statement:

This research was approved by the Human Research Protections Program Institutional Research Board at the University of California, San Diego (#170672), Weill Cornell Medical College (#1803019105), Mbarara University of Science and Technology Research Ethics Committee (#16/01-17) and the Ugandan National Council for Science and Technology (#SS4338). Participants provided written and verbal informed consent in Runyankore.

RESULTS

Characteristics of Participants

Characteristic	Traditional healer clients (N=30)	Biomedical clients (N=30)
Report previously receiving care from alternate modality	N=30 (100%)	N=2 (7%)
Age (in years)	30 (median) IQR = 20	28.5 (median) IQR = 10.75
Female gender (%)	N = 16 (53%)	N= 18 (60%)
Primary school education or less	N= 14 (47%)	N = 13 (43%)
Household size (in persons)	5 (median) IQR = 3	4.5 (median) IQR = 3.5
Marital status	Single (N = 7) Married/Cohabiting (N = 21) Widowed (N = 2)	Single (N = 11) Married/Cohabiting (N = 17) Widowed (N = 2)
Christian religion	N = 25 (83%)	N = 23 (77%)
Monthly household income (in USD)	\$41 (median), IQR = 76	\$22 (median) IQR = 46
Type of healer visited on day of enrollment	Spiritualist (N=12) Bonesetter (N=10) Traditional birth attendant (N=4) Herbalist (N=4)	N/A

Characteristics of study participants appear in Table 1. Over half of the sample had clinical experience with both biomedical and traditional modalities of healthcare. However, pluralistic behaviors were much more commonly reported among patients of traditional healers. Only two participants recruited from the biomedical clinic reported prior experience receiving care from traditional healers (n=2/30, 7%); in contrast, all (n=30) traditional healer patients reported prior experience receiving biomedical treatment.

Participants recruited from healer practice locations were slightly older, with a higher

proportion being married, and with higher reported monthly incomes, compared to the

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biomedicine group. Biomedical participants were recruited from a government-run medical clinic, where they received health services at no cost. Therefore, we would expect lower household incomes, as they have preferentially sought to receive free medical care, rather than present to a fee-for-service facility. Other characteristics, including gender, household size, highest level of education, and religious affiliation, were similar between the two groups.

10 **Qualitative Results**

11 Overview

12 Our qualitative data indicate important perceived advantages and disadvantages to both
13 healthcare modalities, which motivate patient engagement with available resources. We
14 have developed three broad categories representing influences on therapeutic itineraries
15 that were evident in the data. They are summarized as follows: 1) traditional healers
16 treat patients with “care”; 2) biomedicine uses “modern” technologies; and 3) peer
17 “testimony” influences healthcare engagement. Within each of these categories, we
18 provide examples to illustrate how these factors drive plural healthcare engagement. We
19 consider each one separately, below, and then present a conceptual model for how
20 these factors interrelate to create therapeutic itineraries in southwestern Uganda.
21
22

23 A. *Traditional healers care about their patients*

24 Patients recruited from traditional healers report positive experiences with their care,
25 specifically describing that treatments effectively relieve their symptoms. Participants
26 state that they prefer traditional therapies because traditional practitioners “heal faster”.
27 This efficient healing is sometimes attributed to the fact that traditional practitioners
28 spend more time personally treating and caring for their patients, compared with
29 healthcare workers in biomedical settings:
30

31 *Those [bonesetters] are super! They heal faster than biomedical. When you*
32 *take your patient to a bonesetter, he does not take long to get healed, compared*
33 *to one in the hospital. In hospitals, the healing process is long because they do*
34 *not do much more than hanging you there [in traction] and leave you. You can*
35 *even become lame because they do not check to see whether you are healing or*
36 *not. But for the healer, he does his reviews [checks your wound healing]*
37 *constantly. (Bonesetter patient, female)*
38
39

40 Patients receiving traditional care also state that they are treated with respect when
41 visiting healers, and that healers are motivated to care for patients, rather than being
42 strictly economically driven. Participants reported that healers attend to patients
43 immediately, even if they did not have money; a few participants stated that healers
44 allowed them to pay for services rendered in installments, or in kind (through farm
45 goods). A participant seeking care from a traditional birth attendant described her
46 preference for traditional healing, emphasizing the kindness of her practitioner:
47

48 *[The healer] does everything for you. Her services are excellent. In fact, when*
49 *you deliver [your children] from here, you do not even think of going elsewhere*
50 *another time. She cares so much about her clients. In fact, for all my*
51 *pregnancies, I received antenatal care from this healer. She is my neighbor, and*
52 *instead of going to sit at the hospital the whole day waiting for checkup, I come*
53 *here. She is my neighbor and her services are good. So, I come get my antenatal*
54 *checkup, and go back home to do my chores. (Traditional birth attendant patient,*
55 *female)*
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4 In contrast, patients describe experiences with biomedicine with narratives of disrespect,
5 mistreatment, neglect or “abuse”. The central message of these biomedical testimonies
6 is that healthcare workers do not care about their patients. In some cases, participants
7 referred to these accounts while explaining why they tend to avoid biomedical facilities.
8 A woman describes her experience receiving antenatal care at the local hospital:
9

10
11 *I came to this hospital for antenatal care and found a nurse who treated me*
12 *badly. She would tell you to lay on the bed and instead of telling you what to do,*
13 *she would shout at you and say, “Don’t face me! Face the other side!” in a loud*
14 *voice, and you wonder what the problem was. She embarrassed me and I felt*
15 *ashamed. I promised myself never to return in this hospital She would only*
16 *shout at us. She was horrible. (Biomedical patient, female)*
17

18 A number of participants describe experiences at biomedical facilities where they are
19 never attended to by biomedical staff, despite waiting for many hours – sometimes
20 spending the entire day without receiving medical attention. These hours spent waiting
21 come at the expense of childcare, household duties and income-generating activities.
22 One man describes his experience seeking biomedical care for a toothache as follows:
23

24
25 *I went to the referral hospital and spent there the whole day without treatment.*
26 *The following morning, when I went back, I was given only Panadol*
27 *[Acetaminophen]. I felt so sad. (Biomedical patient, male)*
28

29 Another patient states that he gave up after waiting all day for a voluntary circumcision
30 procedure:

31
32 *You reach there and sit for the whole day without treatment. Drugs are never*
33 *there and health workers do not attend to patients as it should be. They arrive at*
34 *work late and leave work early. They are really bad. I went [to the clinic] one time*
35 *for circumcision and sat there for many hours until I got hungry and gave up. I left*
36 *without seeing any doctor. (Bonesetter patient, male)*
37

38 B. Biomedicine uses modern technologies to heal

39 Participants state that biomedical care is preferred in instances where “modern”
40 technologies can be utilized to provide a diagnosis for one’s symptoms, and guide
41 treatment. Through blood and radiological tests, healthcare providers can identify the
42 specific cause of a patient’s illness, and provide appropriate care. Patients perceive that
43 the information generated by biomedical technology validates the therapies administered
44 to them:
45

46
47 *They use machines to diagnose and test for conditions. They give the right*
48 *medical information. (Biomedical patient, male).*
49

50 Having received a specific diagnosis, participants also believe that the treatment
51 recommended by healthcare workers will be effective in alleviating their symptoms. For
52 example, one participant described how appropriate medicines have the capacity to
53 heal, even if taken in small amounts:
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55
56 *When you come [to the clinic] you get diagnosed and they write for you a*
57 *prescription and you get the medicine then their service is good ... Even if you*
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3 *get very little medicine from them and take it, you get healed. (Biomedical*
4 *patient, female)*
5

6 Another patient explains why the capacity to intervene with modern biomedical
7 technology is more effective in treating symptoms than traditional medicine:
8

9 *Biomedical facilities are good ... when you are, for instance, in a critical*
10 *condition, they can put you on life support machines, or they can put you on a*
11 *drip. They can also give you tablets and injections that can help you. Traditional*
12 *healers can't manage something like that. They don't have modern equipment.*
13 *They don't have tablets, and they don't have drips and injections. (Bonesetter*
14 *patient, male)*
15

16
17 Results from biomedical testing guide what some participants describe as “proper”,
18 effective treatment, compared with traditional healing where therapies are provided in
19 the absence of any diagnostic testing:
20

21 *[Biomedical facilities] diagnose you and inform you of the ailment that you are*
22 *suffering from, and at times inform you that your health is okay ... When you visit*
23 *biomedical health facilities they diagnose you and inform you of your results and*
24 *in case you are HIV positive, you can start on medicine ... [Traditional healers]*
25 *don't have equipment to diagnose, so how do they diagnose for conditions? ... I*
26 *don't trust them. (Biomedical patient, Female)*
27

28 While biomedicine is favored for its use of diagnostic technologies, other participants
29 describe preference for traditional healing *specifically because* these approaches could
30 enable avoidance of biomedical procedures, which participants describe as
31 “unnecessary” and having high morbidity and mortality. Participants state that an
32 advantage of traditional healing is that it supports the body to heal “naturally”, rather
33 requiring modern, invasive interventions. Participants report seeking traditional care after
34 having been told by biomedical providers that they would require an operation in order to
35 recover. Those who ultimately healed after receiving traditional care declared that
36 biomedical providers rush to use modern technologies, instead of allowing the body to
37 heal on its own. One patient describes his experience receiving care from a bonesetter,
38 after suffering severe extremity fractures after falling from a motorcycle:
39
40

41 *[The hospital staff] told me that the doctors will cut off my leg because it was*
42 *badly injured and that there was no way they could fix it ... When we reached*
43 *[this healer], they told me that the bone that joins the knee was broken but*
44 *promised that since I was in that place, in two to three weeks, I will be able to*
45 *walk again. They then aligned my leg and started the treatment ... I am now*
46 *getting better. If I had remained at the hospital, I know my leg would have been*
47 *cut off by now. (Bonesetter patient, male)*
48

49 Another patient describes how effective treatment from an herbalist allowed her sister to
50 avoid a Caesarean section with her twin pregnancy:
51

52 *These healers are very useful ... my elder sister had a problem with her twin*
53 *pregnancy. She was stuck with the pregnancy because the babies could not*
54 *move. They took her to one of the traditional healers and was given medicine*
55 *which helped her so much and she delivered her babies without difficulties. We*
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3 *thought she would be operated on while giving birth [via Caesarean section]*
4 *because the doctors at referral hospital had told her that she will not manage to*
5 *push and advised her to go for an operation, which did not happen because of*
6 *the medicine the healer gave her. (Spiritual healer patient, female)*
7

8 Participants described fear of utilizing biomedical facilities to deliver their children, as
9 they believed that physicians would perform unnecessary Caesarian sections,
10 considered a high-risk procedure for both mothers and infants:
11

12 *[Doctors] rush women to the operating theatre when it's not necessary. Many*
13 *women and babies have lost their lives due to the negligence of doctors. Women*
14 *fear to deliver from hospital. (Spiritual healer patient, male)*
15

16 C. Peer “testimony” influences healthcare engagement

17 Our participants recount social narratives, or “testimonies” which describe healthcare
18 experiences among peers within their communities. These discursive events evaluate a
19 provider’s competence and effectiveness in addressing ailments, and describe negative
20 or positive outcomes of treatments. Participants indicate that peer testimonies strongly
21 influence where they choose to seek care for their symptoms. We found that biomedical
22 narratives frequently reinforced individual reports of mistreatment; in contrast, narratives
23 about traditional healing were generally positive and affirmed the “real” nature of this
24 form of healthcare.
25

26
27 Numerous participants who received care from traditional healers describe negative peer
28 narratives about biomedicine. A participant describes the testimony from his neighbor
29 that influenced his decision to seek care from a traditional bonesetter:
30

31 *My neighbor reached [the referral hospital after injuring his leg], but nothing much*
32 *was done. They made him sit on the waiting bench and the doctor told the*
33 *caretaker to go and buy a bandage and find an empty box. The doctor then*
34 *dismantled the box and tied it on the leg using the bandage and left him there.*
35 *He remained there until morning. He never got any treatment [for the leg*
36 *injury] apart from the empty boxes they tied on the leg. I will never forget what he*
37 *experienced from the referral hospital. It was so bad and so discouraging. Health*
38 *workers do not care about patients. (Bonesetter patient, male)*
39
40

41 A number of participants recalled community narratives indicating that healthcare
42 workers would intentionally withhold treatment or harm their patients. One woman
43 seeking care at a traditional birth attendant practice describes stories that made her fear
44 that she would be harmed at the hands of healthcare workers:
45

46 *There was a woman in labor who was supposed to be taken to the operating*
47 *theatre but the nurses asked her for money, which she did not have. They*
48 *refused to work on her until other patients contributed some money and gave it to*
49 *the nurses ... Those nurses do not mind whether you die from there or not ...*
50 *There is also one mother I heard about who took her child for immunization and*
51 *got an argument with the nurse. Intentionally the nurse gave the child overdose*
52 *and the child died. Some of these health workers are so wicked. (Herbalist*
53 *patient, female)*
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3 Negative peer testimonies were not limited to patients of healers. For example, one
4 woman seeking biomedical care told a story about her neighbor suffering mistreatment
5 at the same facility.
6

7 *My pregnant neighbor delivered her baby in the village compound. [When they*
8 *arrived at this hospital for post-partum care], the nurse abused her, saying that*
9 *she should take her stupidity back to her village. They do not care. (Biomedical*
10 *patient, female).*
11

12 In stark contrast to narratives surrounding biomedical care, peer testimony surrounding
13 traditional healing is largely positive. Healers are lauded for their effective care, and
14 patients are guided by peer testimonials in selecting which healer to visit for their
15 ailments. One participant seeking care at a traditional herbalist describes the impact of
16 peer endorsements on her decision to seek care from this particular healer:
17

18 *This healer is popular and well known, and wherever you go, people will*
19 *recommend her to treat your sick child ... I have seen so many different people*
20 *come here to receive treatment ... I am impressed. (Spiritual healer patient,*
21 *male).*
22
23

24 A central concept in many testimonies about traditional medicine is the genuineness of
25 the healer, and how they should be set apart from traditional healers who may be “fake”
26 or “quacks”. One participant describes how testimonies from peers with similar injuries
27 directed him to seek care from a specific bonesetter, and how testimonies generate
28 more patients for particular healers:
29

30 *Most traditional healers are quacks, and personally I don't trust them.*
31 *[Interviewer: Then how do you know that you will heal from this treatment?]*
32 *I get the confidence from other people who have been treated here. There is a*
33 *man from a nearby dairy. He bones were more severely broken than mine, but*
34 *he healed from here, and is now doing his work. I have heard many people's*
35 *testimonies that they have been healed from here ... When I come here and get*
36 *healed, I will direct another one because he will be healed too and that person*
37 *will also direct others... A healer who is real does not need to advertise on the*
38 *radios because the people they heal create market for them. (Bonesetter patient,*
39 *male)*
40
41

42 *D. Conceptual Model*

43 Figure 1 presents a conceptual model integrating our findings to show how influences at
44 the healthcare provider, healthcare system, and peer levels influence individual
45 engagement with healthcare in pluralistic settings. These variables interact to shape an
46 individual's therapeutic itinerary, but not necessarily in a stepwise manner. For
47 healthcare users, one or more characteristics of a healthcare system may be of
48 paramount importance in determining use of this resource, but each modality comes with
49 potential disadvantages. Negative experiences could prompt users to switch to the
50 alternate modality. We heard this process described by participants who believed their
51 ailments were initially mismanaged by biomedical providers, and were subsequently
52 healed using traditional approaches. Similarly, positive experiences contribute towards
53 continued use of a healthcare modality, and an individual may become reticent to
54 engage with the alternative in light of continued positive health outcomes.
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DISCUSSION

This study identified variables that drive engagement with healthcare resources in a medically pluralistic setting, and identified three central factors that contribute to therapeutic pluralism. These may be summarized as follows: 1) traditional healers care about their patients, while biomedical providers do not; 2) biomedical technologies can provide diagnosis and guide treatment, but these technologies are sometimes intentionally avoided; and 3) peer testimonies influence healthcare utilization, largely in favor of traditional healing. These can be considered conceptually as factors operating at the healthcare provider, healthcare system, and peer levels (Figure 1).

Our work illustrates how healthcare provider characteristics are of central importance to patients. The quality of interpersonal interactions can either motivate or deter engagement with healthcare services. We found that patient-provider interactions with traditional healers are described as generally respectful and supportive, while patient-provider interactions in biomedical contexts included narratives of neglect and “abuse”. These findings align prior work showing that initial choice of therapeutic modality in pluralistic contexts is driven by perceived trustworthiness of a healthcare provider[22,46-49]. Our participant accounts of negative interactions with biomedical staff are congruent with prior work linking negative interactions with disengagement with HIV care among people living with HIV[4-6], decreased HIV pre-exposure prophylaxis (PrEP) utilization among key populations[7] and lack of healthcare facility use among pregnant women[8-10].

We also describe how some characteristics of the available healthcare systems impact healthcare engagement. Our results speak to the hegemony of biomedicine in Uganda, and more broadly throughout post-colonial sub-Saharan Africa, where biomedicine is highly valued, and may be considered of superior quality and efficacy compared with traditional healing[11,12]. Some participants report gaining reassurance through laboratory and radiologic testing to guide diagnosis and therapy, describing this as “proper” treatment. We note that the desire for healthcare directed by “modern” test results is the central factor favoring biomedical healthcare utilization among our participants. Interestingly, other data from high-resource contexts has shown that diagnostic test results do not increase patient reassurance or decrease health-related anxiety in outpatient biomedical settings[50,51]. However, in our medically pluralistic study site, the capacity of biomedical facilities to perform diagnostic testing is distinctive in contrast to traditional medicine approaches, and therefore some patients consider access to testing as a benefit.

Traditional healthcare is sometimes preferred as a means to avoid invasive procedures, such as orthopedic fixation, limb amputation, or Caesarean section. Our findings are congruent with prior research demonstrating avoidance of facility-based obstetric services, preference for traditional home birth[10,36,52], and bonesetters to heal orthopedic injuries in sub-Saharan Africa[53,54]. Motivation to avoid invasive operative procedures is further explained by poor post-operative outcomes throughout sub-Saharan Africa[55]. For example, maternal mortality after Caesarean section is fifty times higher in Africa compared with high income countries[56]. As such, patients consider invasive biomedical procedures high risk, and seek to avoid them through receipt of traditional therapies.

Additionally, we note that the content of peer testimonies strongly influences patients’ decisions to utilize traditional or biomedical care. Peer influences have been shown to

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3 have strong impact on individual healthcare engagement in the cases of HIV services
4 utilization[57-59], adolescent health[60,61], mental health[62], and substance
5 misuse[63], for example. Our study shows how peer testimonies serve as endorsements
6 of traditional healing, legitimizing its use through descriptions of clinical effectiveness. In
7 contrast, largely negative narratives regarding biomedicine potentiate avoidance of these
8 facilities and services.
9

10 Our findings provide insight on how patients decide to engage with particular healthcare
11 resources, and can guide efforts to improve healthcare quality and interventions in
12 medically pluralistic communities. Importantly, our conceptual model can direct
13 strategies to engage those who may avoid biomedical resources, and have low uptake
14 of conventional healthcare outreach program, which are frequently facility-based, and/or
15 delivered by biomedical providers. Our data suggest that healthcare users value the
16 interpersonal interactions and trustworthiness of healers, but also may gain reassurance
17 through receipt of biomedical testing and diagnostic technologies. An ideal health
18 resource in a pluralistic context would potentially incorporate all of these valuable
19 attributes. Traditional healers in Ghana have taken this approach, utilizing components
20 of biomedical knowledge through reference to medical textbooks and “Google”[64].
21 Similarly, we know of healers in Mbarara District who use glucometers, blood pressure
22 cuffs, and performed commercially available rapid diagnostics tests for HIV and malaria.
23 Our data suggest that decentralized healthcare services would be highly acceptable
24 among pluralistic communities. An example of his approach at the national health policy
25 level is demonstrated in the case of “differentiated care” for PLHIV[20], where service
26 delivery is tailored to the needs of PLHIV in their communities, and biomedical facility
27 visits are minimized.
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29

30 Finally, our data contribute to a body of work that emphasizes the important role of
31 traditional healers within the communities they serve. We hope our findings explain the
32 persistent appeal of traditional medicine, and demonstrate that pluralistic behavior
33 should be considered more than ‘an inconvenient truth’ for biomedical providers,
34 researchers and policy makers. Low biomedical engagement in pluralistic settings
35 should not simply be attributed to lack of access to formal resources, but should be
36 considered an individual’s informed healthcare choice. We recommend that researchers
37 and policy makers involve traditional healers when designing and implementing
38 community-based health initiatives because healers are well positioned allies for
39 healthcare programs. Community members may consider healers more trustworthy than
40 biomedical providers[49]. Biomedicine could learn a great deal from healers regarding
41 the power of interpersonal relationships as part of the healthcare process[13,14]. For
42 example, Moshabela et. al. (2016) considered the roles of traditional healers in the
43 context of a community-wide HIV testing and treatment intervention. They found that
44 healers boosted impact and acceptability of the intervention through educating clients on
45 HIV-related stigma and supporting linkage to HIV care[19].
46
47

48 Many studies have shown that healers are interested in working with biomedical
49 providers to improve health outcomes for their patients[29,65,66]. However, the
50 converse is not typically the case. Biomedical objections to traditional healing largely
51 focus on use of alternatively explanatory mechanisms (such as belief that evil spirits or
52 bad luck may cause physical symptoms), lack of standardized training and oversight of
53 practices, and delivery of varying concentrations or mixtures of herbal therapies[15]. In
54 fact, negative attitudes towards traditional medicine have been described as the primary
55 barrier to true collaboration between traditional and biomedicine, as biomedical providers
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3 repeatedly downplay the skills and contributions of traditional healers[16,17]. Biomedical
4 providers may express distrust and disapproval of traditional medicine in interactions
5 with their patients[16-18]. Related to this lack of trust is the observation that our
6 participant groups reported markedly different experiences with pluralistic healthcare
7 utilization. Most biomedical participants denied prior use of traditional medicine, while
8 most traditional medicine users reported having previously sought biomedical care. This
9 difference in self-reporting is likely an example of a well described phenomenon, where
10 patients are reticent to disclose traditional medicine use in the context of receiving
11 biomedical care[18,67,68]. Therefore, we suspect that participants seeking care in the
12 biomedical context under-reported traditional medicine use due to fear of social
13 judgement.
14

15
16 There are a few limitations of this study. We acknowledge that baseline characteristics of
17 participants recruited from traditional healer practices are different than those recruited
18 from an outpatient biomedical practice. Qualitative samples are intended to be relevant
19 to the research question, and may not be representative, as would be prioritized in a
20 quantitative study. We did not record medical histories for our participants, and cannot
21 speak to how particular diagnoses may motivate to healthcare itinerary, beyond the
22 symptoms prompting the current visit. This study includes only people seeking
23 healthcare from traditional healers, and similar work is needed for those seeking care
24 from faith healers. Further, we acknowledge the potential impact of social judgement and
25 recognize that some biomedical participants may have been reticent to share positive
26 feelings about traditional medicine during their interviews. Last, our qualitative data
27 indicate multiple directions for future research. For example, what are strategies to
28 facilitate bidirectional cooperation between traditional and biomedical systems? How
29 would one design and implement a decentralized healthcare initiative in cooperation with
30 traditional healers?
31

32 **CONCLUSIONS**

33 Patients perceive clear advantages and disadvantages to biomedical and traditional care
34 in medically pluralistic settings. We identified factors at the healthcare provider,
35 healthcare system, and peer levels which can influence patients' therapeutic itineraries,
36 and illustrate why traditional medicine is sometimes preferred. Our findings can inform
37 community-based, public health interventions in medically pluralistic contexts, and
38 underscore the importance of recognizing and engaging with traditional healers as
39 important stakeholders in community health.
40

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45
46

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48 RS conceived of the study. RK and JMA provided input on study design, study
49 procedures. RS and JMA oversaw data collection. RS was primarily responsible for data
50 analysis, with input from JMA, RK and NW. RS composed the first draft of the
51 manuscript. All authors provided input and approve of the final submission.
52

53 **COMPETING INTERESTS**

54 The authors declare no competing interests.
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DATA SHARING STATEMENT

Deidentified data may be shared upon reasonable request by emailing the first author.

PATIENT AND PUBLIC INVOLVEMENT STATEMENT

Patients were included as participants in this study. They did not directly participate in the design or implementation of the study, as the purpose of the study was to elicit patient perspectives on community healthcare resources. Results of this study were used to guide development of a study community advisory board, which includes patients and other stakeholders, including healthcare providers, traditional healers and community leaders.

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FIGURE CAPTION

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51 Figure 1. Conceptual model showing key factors within various levels (healthcare provider, healthcare system, peer) influencing individual health behavior within medically pluralistic contexts. Each factor differentially influences an individual's therapeutic itinerary. Negative factors may motivate a switch to the other modality, and positive factors contribute towards continued use of a particular healthcare modality. This model

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is not inclusive of all variables that influence health engagement, but illustrates categories that were described by our participants in driving their healthcare decision making, specifically regarding decisions to utilize traditional or biomedical care.

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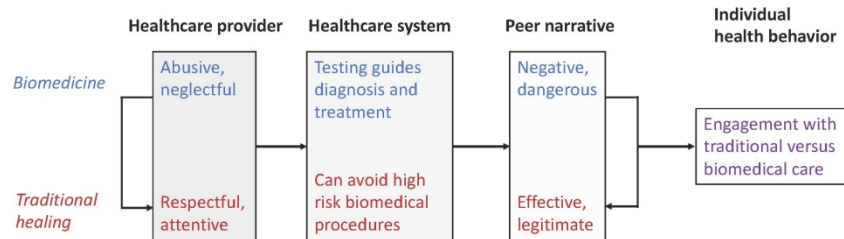


Figure 1. Conceptual model showing key factors within various levels (healthcare provider, healthcare system, peer) influencing individual health behavior within medically pluralistic contexts. Each factor differentially influences an individual's therapeutic itinerary. Negative factors may motivate a switch to the other modality, and positive factors contribute towards continued use of a particular healthcare modality. This model is not inclusive of all variables that influence health engagement, but illustrates categories that were described by our participants in driving their healthcare decision making, specifically regarding decisions to utilize traditional or biomedical care.

338x190mm (200 x 200 DPI)

Standards for Reporting Qualitative Research (SRQR)*

<http://www.equator-network.org/reporting-guidelines/srqr/>

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Title and abstract

<p>Title - Concise description of the nature and topic of the study Identifying the study as qualitative or indicating the approach (e.g., ethnography, grounded theory) or data collection methods (e.g., interview, focus group) is recommended</p>	1
<p>Abstract - Summary of key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results, and conclusions</p>	2

Introduction

<p>Problem formulation - Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement</p>	3-4
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Methods

<p>Qualitative approach and research paradigm - Qualitative approach (e.g., ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g., postpositivist, constructivist/ interpretivist) is also recommended; rationale**</p>	6
<p>Researcher characteristics and reflexivity - Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, and/or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, and/or transferability</p>	6
<p>Context - Setting/site and salient contextual factors; rationale**</p>	4-5
<p>Sampling strategy - How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g., sampling saturation); rationale**</p>	4-6
<p>Ethical issues pertaining to human subjects - Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues</p>	7
<p>Data collection methods - Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/methods, and modification of procedures in response to evolving study findings; rationale**</p>	6

1 2 3 4 5	Data collection instruments and technologies - Description of instruments (e.g., interview guides, questionnaires) and devices (e.g., audio recorders) used for data collection; if/how the instrument(s) changed over the course of the study	5-6
6 7 8	Units of study - Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	7
9 10 11 12	Data processing - Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymization/de-identification of excerpts	6-7
13 14 15 16	Data analysis - Process by which inferences, themes, etc., were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale**	6-7
17 18 19 20	Techniques to enhance trustworthiness - Techniques to enhance trustworthiness and credibility of data analysis (e.g., member checking, audit trail, triangulation); rationale**	6

Results/findings

23 24 25 26	Synthesis and interpretation - Main findings (e.g., interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	8-12
27 28 29	Links to empirical data - Evidence (e.g., quotes, field notes, text excerpts, photographs) to substantiate analytic findings	8-12

Discussion

32 33 34 35 36 37	Integration with prior work, implications, transferability, and contribution(s) to the field - Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application/generalizability; identification of unique contribution(s) to scholarship in a discipline or field	12-15
38 39	Limitations - Trustworthiness and limitations of findings	15

Other

42 43 44	Conflicts of interest - Potential sources of influence or perceived influence on study conduct and conclusions; how these were managed	16
45 46	Funding - Sources of funding and other support; role of funders in data collection, interpretation, and reporting	16

*The authors created the SRQR by searching the literature to identify guidelines, reporting standards, and critical appraisal criteria for qualitative research; reviewing the reference lists of retrieved sources; and contacting experts to gain feedback. The SRQR aims to improve the transparency of all aspects of qualitative research by providing clear standards for reporting qualitative research.

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Reference:

O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. **Standards for reporting qualitative research: a synthesis of recommendations.** *Academic Medicine*, Vol. 89, No. 9 / Sept 2014
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3 **A conceptual model for pluralistic healthcare behavior: results from a qualitative**
4 **study in southwestern Uganda**
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ABSTRACT

Introduction: *Medical pluralism*, or concurrent utilization of multiple therapeutic modalities, is common in various international contexts, and has been characterized as a factor contributing to poor health outcomes in low-resource settings. Traditional healers are ubiquitous providers in most regions, including the study site of southwestern Uganda. Where both informal and formal healthcare services are both available, patients do not engage with both options equally. It is not well understood why patients choose to engage with one healthcare modality over the other. The goal of this study was to explain therapeutic itineraries and create a conceptual framework of pluralistic health behavior.

Methods: In-depth interviews were conducted from September 2017 – February 2018 with patients seeking care at traditional healers (N=30) and at an outpatient medicine clinic (N=30) in Mbarara, Uganda; the study is nested within a longitudinal project examining HIV testing engagement among traditional healer-utilizing communities. Inclusion criteria included age ≥ 18 years, and ability to provide informed consent. Participants were recruited from practices representing the range of healer specialties. Following an inductive approach, interview transcripts were reviewed and coded to identify conceptual categories explaining healthcare utilization.

Results: We identified three broad categories relevant to healthcare utilization: 1) traditional healers treat patients with “care”; 2) biomedicine uses “modern” technologies; and 3) peer “testimony” influences healthcare engagement. These categories describe variables at the healthcare provider, healthcare system, and peer levels that interrelate to motivate individual engagement in pluralistic health resources.

Conclusions: Patients perceive clear advantages and disadvantages to biomedical and traditional care in medically pluralistic settings. We identified factors at the healthcare provider, healthcare system, and peer levels which influence patients’ therapeutic itineraries. Our findings provide a basis to improve health outcomes in medically pluralistic settings, and underscore the importance of recognizing traditional healers as important stakeholders in community health.

Keywords: Medical pluralism, Uganda, traditional healers, qualitative

STRENGTHS AND LIMITATIONS OF THIS STUDY

- This study illuminates factors that motivate engagement with healthcare resources by using data from biomedical and traditional medicine utilizers
- This study employed qualitative methods to explore participants' own experiences of healthcare modalities, and identify perceived advantages and disadvantages of each form of healing
- While the data gathered is highly contextual and specific to the study context, the conceptual model presented offers a broad application to other medically pluralistic communities
- This conceptual model could be used to guide healthcare initiatives, policies, and research in pluralistic settings

INTRODUCTION

Medical pluralism, or utilization of multiple therapeutic modalities, is common where both biomedical and complementary or alternative treatments are available to patients. This pattern of healthcare engagement is observed in both high-[1,2] and low-resource settings[3-6], and is well described for patients with both acute[7-9] and chronic illness[10-13] in various international contexts. In low- and middle-income countries, complementary and alternative healthcare services are often provided by traditional healers, who practice outside of the formal biomedical system. Traditional healers are broadly defined by the World Health Organization as: 1) persons recognized by local community as healers; 2) having regular patient attendance; and 3) having space to receive and treat patients[14]. They "provide health care by using plant, animal and mineral substances, and other methods based on social, cultural, and religious practices" [14]. It is estimated that 80% of the population in sub-Saharan Africa visit traditional healers[5].

As such, traditional healers are an initial point of contact for patients in medically pluralistic settings. Patients may prefer informal health services from traditional healers because of their increased accessibility: healers are present in higher numbers than physicians and biomedical facilities, particularly in low-resource settings[5]. However, their popularity cannot be strictly explained by convenience. Research in urban regions having high density of biomedical institutions demonstrates similar reliance on traditional healers[1,3]. Patients may also seek out traditional therapies to address symptoms attributed to ancestral curses or bewitching, believed incurable by biomedicine[15]. Use of traditional medicine is also strongly tied to local religious and ethnic identities[16]. Patients may pursue traditional healing in the setting of biomedicine treatment "failure", when symptoms worsen or persist despite ongoing therapies[6,17,18].

Prior research has shown that traditional healer use is a factor contributing to poor health outcomes among patients. For example, receiving care from a traditional healer has been shown to delay HIV testing and antiretroviral therapy (ART) initiation[19], and interrupt HIV treatment[18] for people living with HIV (PLHIV). In Mozambique, PLHIV initially seeking care from traditional healers experienced significantly longer delays to diagnosis compared with those who did not utilize healers; this delay exponentially grew with corresponding increases in the number of healers consulted prior to receiving HIV testing[19]. In South Africa, medical pluralism was shown to be negatively associated with ART use in a cohort of PLHIV[20]. Use of traditional healers was also identified as an important variable contributing to the recent Ebola outbreak in West Africa[21]. Studies have demonstrated that medical pluralism similarly contributes to poor outcomes

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3 for non-infectious diseases, such as nonadherence to chemotherapy for cancer[4,22], or
4 poor outpatient linkage to care for patients with hypertension[12].
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6 Because they are frequently consulted for most types of illness, traditional healers could
7 be important allies for public health initiatives. Some programs have attempted to
8 engage with healers for these purposes, which have included trainings for healers to
9 deliver counseling and facility referral for HIV[23,24], TB[25], or malaria testing[7], or to
10 increase uptake of prenatal care[26] and mental health treatment[27]. However, in most
11 cases, program effectiveness has been limited by the fact that patients may not
12 complete referrals to facilities. These findings highly the fact that where both informal
13 and formal healthcare services are available, patients do not engage with both options
14 equally.
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17 There remains a critical lack of understanding about why patients choose to utilize one
18 healthcare resource, but not another. It is clear that biomedicine and traditional healing
19 offer distinctive forms of healthcare for patients. But there is a dearth of knowledge on
20 perceived advantages and disadvantages of each modality from the perspective of the
21 healthcare user. Without this information, healthcare initiatives in pluralistic settings
22 cannot be truly “patient-centered”, and are at risk for failure. The goal of this study was
23 to identify factors that motivate engagement with healthcare resources in a sub-Saharan
24 African context, using qualitative research methods. We sought to explain therapeutic
25 itineraries by conducting interviews with users of biomedical and traditional healthcare
26 resources. These data were used to develop a general, conceptual framework that can
27 inform future work in similar medically pluralistic settings.
28

29 **METHODS**

30 **Study Setting and Design**

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32 This qualitative study was conducted in Mbarara District, Uganda, a rural district of
33 418,000 residents located ~275 km southwest of the capital city of Kampala.
34 Southwestern Uganda is a medically pluralistic context, where both traditional and
35 biomedical modalities of healthcare co-exist[28-30].
36
37

38 The World Health Organization defines “traditional medicine practices” to include both
39 medication and procedure-based treatments, including use of herbal remedies, manual
40 physical manipulation, and spiritual therapies[5,14]. The scope of treatments delivered
41 by healers throughout the world varies by location. In Uganda, traditional healers
42 practice herbalism and spiritual healing[31]; they also set broken bones[32] and attend
43 births in the community[33]. Spiritual healers attribute their powers to the *Bachwezi*,
44 which are believed to be ancestral spirits from an ancient kingdom that previously
45 occupied this region of eastern Africa[34,35]. For the purposes of this study, we
46 excluded Christian or Muslim spiritual healers (i.e., “Born Again” or Pentecostal
47 ministries), which have been extensively studied in sub-Saharan Africa as “faith healers”
48 [18,36]. In Uganda, traditional healing is not formally recognized by the Ministry of
49 Health; there is no centralized oversight of traditional healing training programs or
50 services. This research was conducted as part of a multi-year, mixed methods study of
51 HIV services engagement in a medically pluralistic community.
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54 **Sampling and Recruitment**

55 Following a purposive sampling strategy, sixty (N=60) adults were identified to
56 participate as key informants in this study, or “individuals that are especially
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3 knowledgeable about or experienced with a phenomenon of interest”[37]. In our case,
4 key informants were selected to represent variation in experiences of receiving
5 modalities of healthcare: biomedical and traditional. That is, participants were patients
6 representing two subgroups: (1) individuals receiving treatment from traditional healers
7 (N=30), and (2) individuals receiving treatment from a biomedical general medicine
8 outpatient clinic (N=30). Inclusion criteria for all participants were: 1) age \geq 18 years; 2)
9 ability to provide informed consent; and 3) seeking healthcare at either a traditional
10 healer or outpatient biomedical clinic in Mbarara District.
11

12 Both verbal and written informed consent were obtained by Ugandan research
13 assistants (RAs) prior to enrollment. After verbally reviewing the consent form, research
14 staff used a 5-item questionnaire to assess whether the potential participant understood
15 the study and consent process. This questionnaire posed questions critical to
16 demonstrating consent, such as “How much time will this take you?”; “What are the
17 possible benefits for you?”. If a potential participant demonstrated errors in
18 understanding, these were corrected, and potential participants asked if they needed
19 further clarification. If, after further attempts to clarify misunderstandings, study staff
20 determined that the potential participant did not comprehend the consent process, or
21 critical aspects of the study, they were not enrolled.
22
23

24 Participants in the traditional medicine subgroup were recruited from twelve traditional
25 healer practices which reflected the range of healer specialties present in the study
26 region: herbalist, bone setter, traditional birth attendant, and spiritual healer. All were
27 located within 20 kilometers of Mbarara town center. It is well established that men tend
28 to have low uptake of in healthcare services in sub-Saharan Africa[38-40]. In order to
29 ensure that male perspectives were represented, we recruited two-thirds of participants
30 at healer practices who were known to provide services for men. Therefore, more
31 bonesetter and spiritual healer patients are included in the traditional healer group.
32 Participants in the biomedical subgroup were recruited from Mbarara Municipality Clinic,
33 a general outpatient government-run clinic in the town of Mbarara, which serves
34 approximately 50,000 patients per year. Services at this clinic are provided free of
35 charge.
36
37

38 At both traditional and biomedical facilities, RAs approached patients following
39 completion of visits to assess eligibility and interest in participation. Potential participants
40 were individually recruited by RAs, who visited recruitment sites once per week during
41 business hours to screen for eligible patients. Recruitment visits were scheduled on
42 random days of the week to maximize variation of participants included in this study. A
43 maximum of two participants was enrolled during each site visit in order to allow ample
44 time to review informed consent and conduct minimally-structured interviews. This
45 approach ensured interview quality, and was central to the inductive data analysis
46 process by providing time to review interview content, provide feedback to RAs, and
47 identify preliminary codes (see “Data Collection” and “Analysis of Data” sections for
48 more details). Biomedical clinic leadership and traditional healers gave permission for
49 study staff to recruit patients at their practices. Recruitment was carried out over a period
50 of six months (September 2017 - February 2018).
51
52

53 A target sample size of 30 participants per subgroup was guided by prior research
54 suggesting that a range between 20 and 30 interviews is adequate to reach *thematic*
55 *saturation*, the point at which no new concepts emerge from subsequent interviews[41-
56 43]. After 30 interviews per group were conducted, the study authors agreed that
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3 thematic saturation had been reached, and interview content no longer contained new or
4 surprising content.
5

6 **Data Collection**

7 Three Ugandan Research Assistants (RAs), two female and one male, with prior
8 experience in conducting qualitative interviews in southwestern Uganda collected data
9 for this study. Prior to initiation of data collection, all RAs took part in a three-day training
10 session led by RS and JMA, which focused on the principles of qualitative research,
11 approaches to conducting high quality interviews, and establishing standard procedures
12 for interview translation and transcription. In addition, the RAs underwent intensive
13 training with interview guide questions to ensure consistency of delivery and use
14 throughout the study.
15

16
17 Each study participant took part in a single, individual, in-depth interview with one of
18 these RAs. Interviews were conducted following an interview guide that included the
19 following topics: 1) details of the patient's therapeutic itinerary for his/her current
20 symptoms; 2) symptoms that motivated him/her to seek healthcare; 3) attitudes towards,
21 and experiences with, traditional and biomedicine; and 4) details of concurrent or recent
22 biomedical and traditional healer visits. The interview guide was created in English,
23 translated to the local language (Runyankore), and back-translated into English to verify
24 preservation of meaning. In addition, the interview guide was piloted with three
25 traditional healers prior to initiation of data collection in August 2017; these responses
26 were not included in our analysis.
27

28
29 Interviews lasted approximately one hour and were conducted in the local language
30 (Runyankore), in private locations at either healer practices or at the participating
31 biomedical clinic. Participants received the equivalent of 10,000 Ugandan Shillings
32 (UGX, ~\$3 USD) in household staples (cooking oil, sugar, salt, soap) in recognition of
33 the time and effort required to participate in the interview.
34

35
36 Interviews were digitally recorded, then transcribed and translated into English by the
37 same RA who had conducted the interview. All transcripts were produced within 72
38 hours of the interview being completed. The transcripts were reviewed line-by-line by the
39 first author for quality, content, and to provide feedback to the RAs regarding strategies
40 to improve interviewing techniques. This monitoring process allowed for RAs to receive
41 consistent feedback to improve interviewing skills to ensure that interviews were
42 consistently high quality, explored participants unique experiences, and focused on
43 interview guide topics across interviewers. Though some variation is expected in
44 qualitative interview data, we maximized the validity of our data by continuing enrollment
45 until thematic saturation was reached in each participant group (please see "Sampling
46 and Recruitment", above). English transcripts were spot-checked against audio
47 recordings by an author (JMA, who is fluent in Runyankore and English) to ensure
48 validity and integrity of translations.
49

50 **Analysis of Data**

51 A three-step, inductive approach was used to analyze the qualitative data, as follows: (1)
52 development of codes; (2) coding; and (3) category construction. We employed an
53 interpretive phenomenological approach to data analysis[44,45], as the goal of this study
54 was to explore participants' own experiences and perspectives on healthcare
55 engagement.
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Development of Codes.

Two authors (RS and JMA) reviewed transcripts within 72 hours of completion and corresponded weekly to identify and discuss emerging concepts. Guided by these discussions, the first author (RS) produced an initial set of codes, or labels that described key concepts in the dataset. Using an inductive strategy, this process was conducted while interviews were ongoing, providing overlap between qualitative interviewing and data analysis, allowing for iterative engagement with the dataset to identify concepts of interest. As additional transcripts were produced and reviewed, codes were reviewed and refined to fit the data. Using the “constant comparison” method, newly coded text segments were compared to text segments previously marked with the same code to determine if they reflected the same concept[46]. This process was repeated until all transcripts had been reviewed. A final list of codes was produced through discussion and consensus among three co-authors (RS, JMA and RK).

Coding:

All study transcripts were coded, and re-coded when necessary, using the finalized list of codes. QSR NVivo 11 (QRS International Pty Ltd) was used for coding and data organization, but not in development of codes.

Category Construction:

Next, coded data were examined and grouped to form conceptual categories, where data are aggregated based on similarities of meaning. Categories are defined below using text examples. Quotes from participants are shown as italicized and indented. Interrelationships between categories were identified to create a conceptual framework illustrating factors that influence health behavior in a pluralistic context (Figure 1).

Ethical Statement:

This research was approved by the Human Research Protections Program Institutional Research Board at the University of California, San Diego (#170672), Weill Cornell Medical College (#1803019105), Mbarara University of Science and Technology Research Ethics Committee (#16/01-17) and the Ugandan National Council for Science and Technology (#SS4338). Participants provided written and verbal informed consent in Runyankore.

Characteristic	Traditional healer clients (N=30)	Biomedical clients (N=30)
Report previously receiving care from alternate modality	N=30 (100%)	N=2 (7%)
Age (in years)	30 (median) IQR = 20	28.5 (median) IQR = 10.75
Female gender (%)	N = 16 (53%)	N= 18 (60%)
Primary school education or less	N= 14 (47%)	N = 13 (43%)
Household size (in persons)	5 (median) IQR = 3	4.5 (median) IQR = 3.5
Marital status	Single (N = 7) Married/Cohabiting (N = 21) Widowed (N = 2)	Single (N = 11) Married/Cohabiting (N = 17) Widowed (N = 2)
Christian religion	N = 25 (83%)	N = 23 (77%)
Monthly household income (in USD)	\$41 (median), IQR = 76	\$22 (median) IQR = 46
Type of healer visited on day of enrollment	Spiritualist (N=12) Bonesetter (N=10) Traditional birth attendant (N=4) Herbalist (N=4)	N/A

RESULTS

Characteristics of Participants

Characteristics of study participants appear in Table 1. Over half of the sample had

1
2
3 clinical experience with both biomedical and traditional modalities of healthcare.
4 However, pluralistic behaviors were much more commonly reported among patients of
5 traditional healers. Only two participants recruited from the biomedical clinic reported
6 prior experience receiving care from traditional healers (n=2/30, 7%); in contrast, all
7 (n=30) traditional healer patients reported prior experience receiving biomedical
8 treatment.
9

10 Participants recruited from healer practice locations were slightly older, with a higher
11 proportion being married, and with higher reported monthly incomes, compared to the
12 biomedicine group. Biomedical participants were recruited from a government-run
13 medical clinic, where they received health services at no cost. Therefore, we would
14 expect lower household incomes, as they have preferentially sought to receive free
15 medical care, rather than present to a fee-for-service facility. Other characteristics,
16 including gender, household size, highest level of education, and religious affiliation,
17 were similar between the two groups.
18
19

20 **Qualitative Results**

21 Overview

22 Our qualitative data indicate important perceived advantages and disadvantages to both
23 healthcare modalities, which motivate patient engagement with available resources. We
24 have developed three broad categories representing influences on therapeutic itineraries
25 that were evident in the data. They are summarized as follows: 1) traditional healers
26 treat patients with “care”; 2) biomedicine uses “modern” technologies; and 3) peer
27 “testimony” influences healthcare engagement. Within each of these categories, we
28 provide examples to illustrate how these factors drive plural healthcare engagement. We
29 consider each one separately, below, and then present a conceptual model for how
30 these factors interrelate to create therapeutic itineraries in southwestern Uganda.
31
32

33 *A. Traditional healers care about their patients*

34 Patients recruited from traditional healers report positive experiences with their care,
35 specifically describing that treatments effectively relieve their symptoms. Participants
36 state that they prefer traditional therapies because traditional practitioners “heal faster”.
37 This efficient healing is sometimes attributed to the fact that traditional practitioners
38 spend more time personally treating and caring for their patients, compared with
39 healthcare workers in biomedical settings:
40

41 *Those [bonesetters] are super! They heal faster than biomedical. When you*
42 *take your patient to a bonesetter, he does not take long to get healed, compared*
43 *to one in the hospital. In hospitals, the healing process is long because they do*
44 *not do much more than hanging you there [in traction] and leave you. You can*
45 *even become lame because they do not check to see whether you are healing or*
46 *not. But for the healer, he does his reviews [checks your wound healing]*
47 *constantly. (Bonesetter patient, female)*
48

49 Patients receiving traditional care also state that they are treated with respect when
50 visiting healers, and that healers are motivated to care for patients, rather than being
51 strictly economically driven. Participants reported that healers attend to patients
52 immediately, even if they did not have money; a few participants stated that healers
53 allowed them to pay for services rendered in installments, or in kind (through farm
54 goods). A participant seeking care from a traditional birth attendant described her
55 preference for traditional healing, emphasizing the kindness of her practitioner:
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4 *[The healer] does everything for you. Her services are excellent. In fact, when*
5 *you deliver [your children] from here, you do not even think of going elsewhere*
6 *another time. She cares so much about her clients. In fact, for all my*
7 *pregnancies, I received antenatal care from this healer. She is my neighbor, and*
8 *instead of going to sit at the hospital the whole day waiting for checkup, I come*
9 *here. She is my neighbor and her services are good. So, I come get my antenatal*
10 *checkup, and go back home to do my chores. (Traditional birth attendant patient,*
11 *female)*
12

13
14 In contrast, patients describe experiences with biomedicine with narratives of disrespect,
15 mistreatment, neglect or “abuse”. The central message of these biomedical testimonies
16 is that healthcare workers do not care about their patients. In some cases, participants
17 referred to these accounts while explaining why they tend to avoid biomedical facilities.
18 A woman describes her experience receiving antenatal care at the local hospital:
19

20 *I came to this hospital for antenatal care and found a nurse who treated me*
21 *badly. She would tell you to lay on the bed and instead of telling you what to do,*
22 *she would shout at you and say, “Don’t face me! Face the other side!” in a loud*
23 *voice, and you wonder what the problem was. She embarrassed me and I felt*
24 *ashamed. I promised myself never to return in this hospital She would only*
25 *shout at us. She was horrible. (Biomedical patient, female)*
26

27
28 A number of participants describe experiences at biomedical facilities where they are
29 never attended to by biomedical staff, despite waiting for many hours – sometimes
30 spending the entire day without receiving medical attention. These hours spent waiting
31 come at the expense of childcare, household duties and income-generating activities.
32 One man describes his experience seeking biomedical care for a toothache as follows:
33

34 *I went to the referral hospital and spent there the whole day without treatment.*
35 *The following morning, when I went back, I was given only Panadol*
36 *[Acetaminophen]. I felt so sad. (Biomedical patient, male)*
37

38 Another patient states that he gave up after waiting all day for a voluntary circumcision
39 procedure:
40

41 *You reach there and sit for the whole day without treatment. Drugs are never*
42 *there and health workers do not attend to patients as it should be. They arrive at*
43 *work late and leave work early. They are really bad. I went [to the clinic] one time*
44 *for circumcision and sat there for many hours until I got hungry and gave up. I left*
45 *without seeing any doctor. (Bonesetter patient, male)*
46

47 **B. Biomedicine uses modern technologies to heal**

48 Participants state that biomedical care is preferred in instances where “modern”
49 technologies can be utilized to provide a diagnosis for one’s symptoms, and guide
50 treatment. Through blood and radiological tests, healthcare providers can identify the
51 specific cause of a patient’s illness, and provide appropriate care. Patients perceive that
52 the information generated by biomedical technology validates the therapies administered
53 to them:
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3 *They use machines to diagnose and test for conditions. They give the right*
4 *medical information. (Biomedical patient, male).*
5

6 Having received a specific diagnosis, participants also believe that the treatment
7 recommended by healthcare workers will be effective in alleviating their symptoms. For
8 example, one participant described how appropriate medicines have the capacity to
9 heal, even if taken in small amounts:
10

11 *When you come [to the clinic] you get diagnosed and they write for you a*
12 *prescription and you get the medicine then their service is good ... Even if you*
13 *get very little medicine from them and take it, you get healed. (Biomedical*
14 *patient, female)*
15

16
17 Another patient explains why the capacity to intervene with modern biomedical
18 technology is more effective in treating symptoms than traditional medicine:
19

20 *Biomedical facilities are good ... when you are, for instance, in a critical*
21 *condition, they can put you on life support machines, or they can put you on a*
22 *drip. They can also give you tablets and injections that can help you. Traditional*
23 *healers can't manage something like that. They don't have modern equipment.*
24 *They don't have tablets, and they don't have drips and injections. (Bonesetter*
25 *patient, male)*
26

27 Results from biomedical testing guide what some participants describe as “proper”,
28 effective treatment, compared with traditional healing where therapies are provided in
29 the absence of any diagnostic testing:
30

31 *[Biomedical facilities] diagnose you and inform you of the ailment that you are*
32 *suffering from, and at times inform you that your health is okay ... When you visit*
33 *biomedical health facilities they diagnose you and inform you of your results and*
34 *in case you are HIV positive, you can start on medicine ... [Traditional healers]*
35 *don't have equipment to diagnose, so how do they diagnose for conditions? ... I*
36 *don't trust them. (Biomedical patient, Female)*
37
38

39 While biomedicine is favored for its use of diagnostic technologies, other participants
40 describe preference for traditional healing *specifically because* these approaches could
41 enable avoidance of biomedical procedures, which participants describe as
42 “unnecessary” and having high morbidity and mortality. Participants state that an
43 advantage of traditional healing is that it supports the body to heal “naturally”, rather
44 requiring modern, invasive interventions. Participants report seeking traditional care after
45 having been told by biomedical providers that they would require an operation in order to
46 recover. Those who ultimately healed after receiving traditional care declared that
47 biomedical providers rush to use modern technologies, instead of allowing the body to
48 heal on its own. One patient describes his experience receiving care from a bonesetter,
49 after suffering severe extremity fractures after falling from a motorcycle:
50

51 *[The hospital staff] told me that the doctors will cut off my leg because it was*
52 *badly injured and that there was no way they could fix it ... When we reached*
53 *[this healer], they told me that the bone that joins the knee was broken but*
54 *promised that since I was in that place, in two to three weeks, I will be able to*
55 *walk again. They then aligned my leg and started the treatment ... I am now*
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3 *getting better. If I had remained at the hospital, I know my leg would have been*
4 *cut off by now. (Bonesetter patient, male)*
5

6 Another patient describes how effective treatment from an herbalist allowed her sister to
7 avoid a Caesarean section with her twin pregnancy:
8

9 *These healers are very useful ... my elder sister had a problem with her twin*
10 *pregnancy. She was stuck with the pregnancy because the babies could not*
11 *move. They took her to one of the traditional healers and was given medicine*
12 *which helped her so much and she delivered her babies without difficulties. We*
13 *thought she would be operated on while giving birth [via Caesarean section]*
14 *because the doctors at referral hospital had told her that she will not manage to*
15 *push and advised her to go for an operation, which did not happen because of*
16 *the medicine the healer gave her. (Spiritual healer patient, female)*
17
18

19 Participants described fear of utilizing biomedical facilities to deliver their children, as
20 they believed that physicians would perform unnecessary Caesarian sections,
21 considered a high-risk procedure for both mothers and infants:
22

23 *[Doctors] rush women to the operating theatre when it's not necessary. Many*
24 *women and babies have lost their lives due to the negligence of doctors. Women*
25 *fear to deliver from hospital. (Spiritual healer patient, male)*
26

27 C. Peer "testimony" influences healthcare engagement

28 Our participants recount social narratives, or "testimonies" which describe healthcare
29 experiences among peers within their communities. These discursive events evaluate a
30 provider's competence and effectiveness in addressing ailments, and describe negative
31 or positive outcomes of treatments. Participants indicate that peer testimonies strongly
32 influence where they choose to seek care for their symptoms. We found that biomedical
33 narratives frequently reinforced individual reports of mistreatment; in contrast, narratives
34 about traditional healing were generally positive and affirmed the "real" nature of this
35 form of healthcare.
36

37
38 Numerous participants who received care from traditional healers describe negative peer
39 narratives about biomedicine. A participant describes the testimony from his neighbor
40 that influenced his decision to seek care from a traditional bonesetter:
41

42 *My neighbor reached [the referral hospital after injuring his leg], but nothing much*
43 *was done. They made him sit on the waiting bench and the doctor told the*
44 *caretaker to go and buy a bandage and find an empty box. The doctor then*
45 *dismantled the box and tied it on the leg using the bandage and left him there.*
46 *He remained there until morning. He never got any treatment [for the leg*
47 *injury] apart from the empty boxes they tied on the leg. I will never forget what he*
48 *experienced from the referral hospital. It was so bad and so discouraging. Health*
49 *workers do not care about patients. (Bonesetter patient, male)*
50

51 A number of participants recalled community narratives indicating that healthcare
52 workers would intentionally withhold treatment or harm their patients. One woman
53 seeking care at a traditional birth attendant practice describes stories that made her fear
54 that she would be harmed at the hands of healthcare workers:
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There was a woman in labor who was supposed to be taken to the operating theatre but the nurses asked her for money, which she did not have. They refused to work on her until other patients contributed some money and gave it to the nurses ... Those nurses do not mind whether you die from there or not ... There is also one mother I heard about who took her child for immunization and got an argument with the nurse. Intentionally the nurse gave the child overdose and the child died. Some of these health workers are so wicked. (Traditional birth attendant patient, female)

Negative peer testimonies were not limited to patients of healers. For example, one woman seeking biomedical care told a story about her neighbor suffering mistreatment at the same facility.

My pregnant neighbor delivered her baby in the village compound. [When they arrived at this hospital for post-partum care], the nurse abused her, saying that she should take her stupidity back to her village. They do not care. (Biomedical patient, female).

In stark contrast to narratives surrounding biomedical care, peer testimony surrounding traditional healing is largely positive. Healers are lauded for their effective care, and patients are guided by peer testimonials in selecting which healer to visit for their ailments. One participant seeking care at a traditional herbalist describes the impact of peer endorsements on her decision to seek care from this particular healer:

This healer is popular and well known, and wherever you go, people will recommend her to treat your sick child ... I have seen so many different people come here to receive treatment ... I am impressed. (Spiritual healer patient, male).

A central concept in many testimonies about traditional medicine is the genuineness of the healer, and how they should be set apart from traditional healers who may be “fake” or “quacks”. One participant describes how testimonies from peers with similar injuries directed him to seek care from a specific bonesetter, and how testimonies generate more patients for particular healers:

Most traditional healers are quacks, and personally I don't trust them. [Interviewer: Then how do you know that you will heal from this treatment?] I get the confidence from other people who have been treated here. There is a man from a nearby dairy. He bones were more severely broken than mine, but he healed from here, and is now doing his work. I have heard many people's testimonies that they have been healed from here ... When I come here and get healed, I will direct another one because he will be healed too and that person will also direct others... A healer who is real does not need to advertise on the radios because the people they heal create market for them. (Bonesetter patient, male)

D. Conceptual Model

Figure 1 presents a conceptual model integrating our findings to show how influences at the healthcare provider, healthcare system, and peer levels influence individual engagement with healthcare in pluralistic settings. These variables interact to shape an individual's therapeutic itinerary, but not necessarily in a stepwise manner. For

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3 healthcare users, one or more characteristics of a healthcare system may be of
4 paramount importance in determining use of this resource, but each modality comes with
5 potential disadvantages. Negative experiences could prompt users to switch to the
6 alternate modality. We heard this process described by participants who believed their
7 ailments were initially mismanaged by biomedical providers, and were subsequently
8 healed using traditional approaches. Similarly, positive experiences contribute towards
9 continued use of a healthcare modality, and an individual may become reticent to
10 engage with the alternative in light of continued positive health outcomes.
11

12 **DISCUSSION**

13 This study identified variables that drive engagement with healthcare resources in a
14 medically pluralistic setting, and identified three central factors that contribute to
15 therapeutic pluralism. These may be summarized as follows: 1) traditional healers care
16 about their patients, while biomedical providers do not; 2) biomedical technologies can
17 provide diagnosis and guide treatment, but these technologies are sometimes
18 intentionally avoided; and 3) peer testimonies influence healthcare utilization, largely in
19 favor of traditional healing. These can be considered conceptually as factors operating at
20 the healthcare provider, healthcare system, and peer levels (Figure 1).
21
22

23 Our work illustrates how healthcare provider characteristics are of central importance to
24 patients. The quality of interpersonal interactions can either motivate or deter
25 engagement with healthcare services. We found that patient-provider interactions with
26 traditional healers are described as generally respectful and supportive, while patient-
27 provider interactions in biomedical contexts included narratives of neglect and “abuse”.
28 These findings align prior work showing that initial choice of therapeutic modality in
29 pluralistic contexts is driven by perceived trustworthiness of a healthcare provider[18,47-
30 50]. Our participant accounts of negative interactions with biomedical staff are congruent
31 with prior work linking negative interactions with disengagement with HIV care among
32 people living with HIV[51-53], decreased HIV pre-exposure prophylaxis (PrEP) utilization
33 among key populations[54] and lack of healthcare facility use among pregnant
34 women[55-57].
35
36

37 We also describe how some characteristics of the available healthcare systems impact
38 healthcare engagement. Our results speak to the hegemony of biomedicine in Uganda,
39 and more broadly throughout post-colonial sub-Saharan Africa, where biomedicine is
40 highly valued, and may be considered of superior quality and efficacy compared with
41 traditional healing[58,59]. Some participants report gaining reassurance through
42 laboratory and radiologic testing to guide diagnosis and therapy, describing this as
43 “proper” treatment. We note that the desire for healthcare directed by “modern” test
44 results is the central factor favoring biomedical healthcare utilization among our
45 participants. Interestingly, other data from high-resource contexts has shown that
46 diagnostic test results do not increase patient reassurance or decrease health-related
47 anxiety in outpatient biomedical settings[60,61]. However, in our medically pluralistic
48 study site, the capacity of biomedical facilities to perform diagnostic testing is distinctive
49 in contrast to traditional medicine approaches, and therefore some patients consider
50 access to testing as a benefit.
51
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53 Traditional healthcare is sometimes preferred as a means to avoid invasive procedures,
54 such as orthopedic fixation, limb amputation, or Caesarean section. Our findings are
55 congruent with prior research demonstrating avoidance of facility-based obstetric
56 services, preference for traditional home birth[30,57,62], and bonesetters to heal
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3 orthopedic injuries in sub-Saharan Africa[32,63]. Motivation to avoid invasive operative
4 procedures is further explained by poor post-operative outcomes throughout sub-
5 Saharan Africa[64]. For example, maternal mortality after Caesarean section is fifty
6 times higher in Africa compared with high income countries[65]. As such, patients
7 consider invasive biomedical procedures high risk, and seek to avoid them through
8 receipt of traditional therapies.
9

10 Additionally, we note that the content of peer testimonies strongly influences patients'
11 decisions to utilize traditional or biomedical care. Peer influences have been shown to
12 have strong impact on individual healthcare engagement in the cases of HIV services
13 utilization[66-68], adolescent health[69,70], mental health[71], and substance
14 misuse[72], for example. Our study shows how peer testimonies serve as endorsements
15 of traditional healing, legitimizing its use through descriptions of clinical effectiveness. In
16 contrast, largely negative narratives regarding biomedicine potentiate avoidance of these
17 facilities and services.
18
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20 Our findings provide insight on how patients decide to engage with particular healthcare
21 resources, and can guide efforts to improve healthcare quality and interventions in
22 medically pluralistic communities. Importantly, our conceptual model can direct
23 strategies to engage those who may avoid biomedical resources, and have low uptake
24 of conventional healthcare outreach program, which are frequently facility-based, and/or
25 delivered by biomedical providers. Our data suggest that healthcare users value the
26 interpersonal interactions and trustworthiness of healers, but also may gain reassurance
27 through receipt of biomedical testing and diagnostic technologies. An ideal health
28 resource in a pluralistic context would potentially incorporate all of these valuable
29 attributes. Traditional healers in Ghana have taken this approach, utilizing components
30 of biomedical knowledge through reference to medical textbooks and "Google"[73].
31 Similarly, we know of healers in Mbarara District who use glucometers, blood pressure
32 cuffs, and performed commercially available rapid diagnostics tests for HIV and malaria.
33 Our data suggest that decentralized healthcare services would be highly acceptable
34 among pluralistic communities. An example of his approach at the national health policy
35 level is demonstrated in the case of "differentiated care" for PLHIV[74], where service
36 delivery is tailored to the needs of PLHIV in their communities, and biomedical facility
37 visits are minimized.
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40 Finally, our data contribute to a body of work that emphasizes the important role of
41 traditional healers within the communities they serve. We hope our findings explain the
42 persistent appeal of traditional medicine, and demonstrate that pluralistic behavior
43 should be considered more than 'an inconvenient truth' for biomedical providers,
44 researchers and policy makers. Low biomedical engagement in pluralistic settings
45 should not simply be attributed to lack of access to formal resources, but should be
46 considered an individual's informed healthcare choice. We recommend that researchers
47 and policy makers involve traditional healers when designing and implementing
48 community-based health initiatives because healers are well positioned allies for
49 healthcare programs. Community members may consider healers more trustworthy than
50 biomedical providers[50]. Biomedicine could learn a great deal from healers regarding
51 the power of interpersonal relationships as part of the healthcare process[75,76]. For
52 example, Moshabela et. al. (2016) considered the roles of traditional healers in the
53 context of a community-wide HIV testing and treatment intervention. They found that
54 healers boosted impact and acceptability of the intervention through educating clients on
55 HIV-related stigma and supporting linkage to HIV care[77].
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4 Many studies have shown that healers are interested in working with biomedical
5 providers to improve health outcomes for their patients[23,78,79]. However, the
6 converse is not typically the case. Biomedical objections to traditional healing largely
7 focus on use of alternatively explanatory mechanisms (such as belief that evil spirits or
8 bad luck may cause physical symptoms), lack of standardized training and oversight of
9 practices, and delivery of varying concentrations or mixtures of herbal therapies[80]. In
10 fact, negative attitudes towards traditional medicine have been described as the primary
11 barrier to true collaboration between traditional and biomedicine, as biomedical providers
12 repeatedly downplay the skills and contributions of traditional healers[81,82]. Biomedical
13 providers may express distrust and disapproval of traditional medicine in interactions
14 with their patients[81-83]. Related to this lack of trust is the observation that our
15 participant groups reported markedly different experiences with pluralistic healthcare
16 utilization. Most biomedical participants denied prior use of traditional medicine, while
17 most traditional medicine users reported having previously sought biomedical care. This
18 difference in self-reporting is likely an example of a well described phenomenon, where
19 patients are reticent to disclose traditional medicine use in the context of receiving
20 biomedical care[6,83,84]. Therefore, we suspect that participants seeking care in the
21 biomedical context under-reported traditional medicine use due to fear of social
22 judgement.
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25 There are a few limitations of this study. We acknowledge that baseline characteristics of
26 participants recruited from traditional healer practices are different than those recruited
27 from an outpatient biomedical practice. Qualitative samples are intended to be relevant
28 to the research question, and may not be representative, as would be prioritized in a
29 quantitative study. We did not record medical histories for our participants, and cannot
30 speak to how particular diagnoses may motivate to healthcare itinerary, beyond the
31 symptoms prompting the current visit. This study includes only people seeking
32 healthcare from traditional healers, and similar work is needed for those seeking care
33 from faith healers. Further, we acknowledge the potential impact of social judgement and
34 recognize that some biomedical participants may have been reticent to share positive
35 feelings about traditional medicine during their interviews. Last, our qualitative data
36 indicate multiple directions for future research. For example, what are strategies to
37 facilitate bidirectional cooperation between traditional and biomedical systems? How
38 would one design and implement a decentralized healthcare initiative in cooperation with
39 traditional healers?
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42 **CONCLUSIONS**

43 Patients perceive clear advantages and disadvantages to biomedical and traditional care
44 in medically pluralistic settings. We identified factors at the healthcare provider,
45 healthcare system, and peer levels which can influence patients' therapeutic itineraries,
46 and illustrate why traditional medicine is sometimes preferred. Our findings can inform
47 community-based, public health interventions in medically pluralistic contexts, and
48 underscore the importance of recognizing and engaging with traditional healers as
49 important stakeholders in community health.
50

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4 us.
5

6 **CONTRIBUTORSHIP STATEMENT**

7 RS conceived of the study. RK and JMA provided input on study design, study
8 procedures. RS and JMA oversaw data collection. RS was primarily responsible for data
9 analysis, with input from JMA, RK and NW. RS composed the first draft of the
10 manuscript. All authors provided input and approve of the final submission.
11

12 **COMPETING INTERESTS**

13 The authors declare no competing interests.
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15

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19 The study funder did not have any role in the study design, collection, analysis,
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21 are independent from the funders, and had full access to all of the data. All authors take
22 responsibility for the integrity of the data and accuracy of the data analysis.
23

24 **DATA SHARING STATEMENT**

25 Deidentified data may be shared upon reasonable request by emailing the first author.
26
27

28 **PATIENT AND PUBLIC INVOLVEMENT STATEMENT**

29 Patients were included as participants in this study. They did not directly participate in
30 the design or implementation of the study, as the purpose of the study was to elicit
31 patient perspectives on community healthcare resources. Results of this study were
32 used to guide development of a study community advisory board, which includes
33 patients and other stakeholders, including healthcare providers, traditional healers and
34 community leaders.
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FIGURE CAPTION

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27 Figure 1. Conceptual model showing key factors within various levels (healthcare
28 provider, healthcare system, peer) influencing individual health behavior within medically
29 pluralistic contexts. Each factor differentially influences an individual's therapeutic
30 itinerary. Negative factors may motivate a switch to the other modality, and positive
31 factors contribute towards continued use of a particular healthcare modality. This model
32 is not inclusive of all variables that influence health engagement, but illustrates
33 categories that were described by our participants in driving their healthcare decision
34 making, specifically regarding decisions to utilize traditional or biomedical care.
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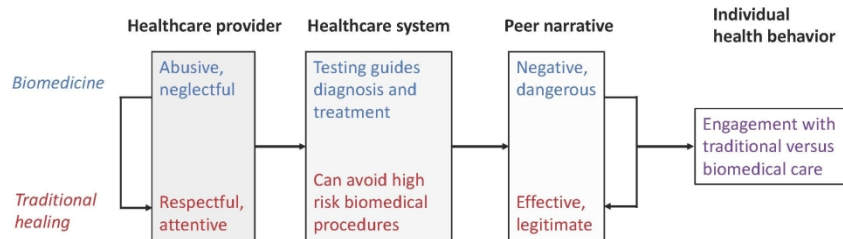


Figure 1. Conceptual model showing key factors within various levels (healthcare provider, healthcare system, peer) influencing individual health behavior within medically pluralistic contexts. Each factor differentially influences an individual's therapeutic itinerary. Negative factors may motivate a switch to the other modality, and positive factors contribute towards continued use of a particular healthcare modality. This model is not inclusive of all variables that influence health engagement, but illustrates categories that were described by our participants in driving their healthcare decision making, specifically regarding decisions to utilize traditional or biomedical care.

338x190mm (200 x 200 DPI)

Standards for Reporting Qualitative Research (SRQR)*

<http://www.equator-network.org/reporting-guidelines/srqr/>

Page/line no(s).

Title and abstract

<p>Title - Concise description of the nature and topic of the study Identifying the study as qualitative or indicating the approach (e.g., ethnography, grounded theory) or data collection methods (e.g., interview, focus group) is recommended</p>	1
<p>Abstract - Summary of key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results, and conclusions</p>	2

Introduction

<p>Problem formulation - Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement</p>	3-4
<p>Purpose or research question - Purpose of the study and specific objectives or questions</p>	4

Methods

<p>Qualitative approach and research paradigm - Qualitative approach (e.g., ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g., postpositivist, constructivist/ interpretivist) is also recommended; rationale**</p>	6
<p>Researcher characteristics and reflexivity - Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, and/or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, and/or transferability</p>	6
<p>Context - Setting/site and salient contextual factors; rationale**</p>	4-5
<p>Sampling strategy - How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g., sampling saturation); rationale**</p>	4-6
<p>Ethical issues pertaining to human subjects - Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues</p>	7
<p>Data collection methods - Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/methods, and modification of procedures in response to evolving study findings; rationale**</p>	6

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3	Data collection instruments and technologies - Description of instruments (e.g.,	
4	interview guides, questionnaires) and devices (e.g., audio recorders) used for data	
5	collection; if/how the instrument(s) changed over the course of the study	5-6
6		
7	Units of study - Number and relevant characteristics of participants, documents,	
8	or events included in the study; level of participation (could be reported in results)	7
9		
10	Data processing - Methods for processing data prior to and during analysis,	
11	including transcription, data entry, data management and security, verification of	
12	data integrity, data coding, and anonymization/de-identification of excerpts	6-7
13		
14	Data analysis - Process by which inferences, themes, etc., were identified and	
15	developed, including the researchers involved in data analysis; usually references a	
16	specific paradigm or approach; rationale**	6-7
17		
18	Techniques to enhance trustworthiness - Techniques to enhance trustworthiness	
19	and credibility of data analysis (e.g., member checking, audit trail, triangulation);	
20	rationale**	6

Results/findings

23	Synthesis and interpretation - Main findings (e.g., interpretations, inferences, and	
24	themes); might include development of a theory or model, or integration with	
25	prior research or theory	8-12
26		
27	Links to empirical data - Evidence (e.g., quotes, field notes, text excerpts,	
28	photographs) to substantiate analytic findings	8-12
29		

Discussion

32	Integration with prior work, implications, transferability, and contribution(s) to	
33	the field - Short summary of main findings; explanation of how findings and	
34	conclusions connect to, support, elaborate on, or challenge conclusions of earlier	
35	scholarship; discussion of scope of application/generalizability; identification of	
36	unique contribution(s) to scholarship in a discipline or field	12-15
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38	Limitations - Trustworthiness and limitations of findings	15
39		

Other

42	Conflicts of interest - Potential sources of influence or perceived influence on	
43	study conduct and conclusions; how these were managed	16
44		
45	Funding - Sources of funding and other support; role of funders in data collection,	
46	interpretation, and reporting	16
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*The authors created the SRQR by searching the literature to identify guidelines, reporting standards, and critical appraisal criteria for qualitative research; reviewing the reference lists of retrieved sources; and contacting experts to gain feedback. The SRQR aims to improve the transparency of all aspects of qualitative research by providing clear standards for reporting qualitative research.

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**The rationale should briefly discuss the justification for choosing that theory, approach, method, or technique rather than other options available, the assumptions and limitations implicit in those choices, and how those choices influence study conclusions and transferability. As appropriate, the rationale for several items might be discussed together.

Reference:

O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. **Standards for reporting qualitative research: a synthesis of recommendations.** *Academic Medicine*, Vol. 89, No. 9 / Sept 2014
DOI: 10.1097/ACM.0000000000000388

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