Original Research

Improving outpatient medication counselling in hospital pharmacy settings: a behavioral analysis using the theoretical domains framework and behavior change wheel

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Abstract

Background: Despite the importance of medication counselling for patients, it is common knowledge that it is often sub-optimally carried out by pharmacy staff. While some interventions have been designed to help improve counselling, no study till date has used the Capability Opportunity and Motivation behavior model (COM-B) or Theoretical Domains Framework (TDF) as a basis for identifying evidence-based intervention strategies to improve medication counselling.

Objective: To understand barriers/facilitators to optimal medication counselling by conducting a behavioral analysis using the COM-B model and TDF, and use the Behavior Change Wheel (BCW) as a basis for identifying evidence-based intervention strategies and policy categories that could be used to improve outpatient medication counselling by pharmacy staff in hospital settings located within Northwest Nigeria.

Methods: Semi-structured interviews were used to collect data from 25 purposively sampled pharmacy staff working at eight major public hospitals, from January till March 2020. Data from the interviews were then transcribed and deductively coded using the COM-B model and TDF. These findings were then used to identify areas requiring change, as well as the intervention type and policy functions required to support these changes.

Results: Findings from the behavioral analysis revealed shortfalls in pharmacy staff capability, opportunity and motivation with respect to outpatient medication counselling. To improve their counselling behaviors, change was identified as necessary in eight TDF domains namely 'knowledge', 'interpersonal skills', 'memory' 'environmental context', 'social influences', 'intentions', 'reinforcement' and 'beliefs about capabilities'. Seven intervention functions including 'education', 'training', 'modelling', 'enablement' and 'environmental restructuring', in addition to three policy categories ('guidelines', 'regulations' and 'environmental/social planning') were also identified as relevant to future intervention design.

Conclusions: Various factors were identified as affecting medication counselling by the pharmacy staff, with several of them requiring changes if counselling was to be improved upon. Multi-component interventions combining several of these intervention functions are recommended for hospital authorities and other relevant stakeholders to improve outpatient medication counselling.

Keywords

Counseling; Outpatients; Professional Practice; Pharmacies; Pharmacy Service, Hospital; Pharmacists; Professional-Patient Relations; Attitude of Health Personnel; Motivation; Social Skills; Social Planning; Models, Theoretical; Qualitative Research; Nigeria

INTRODUCTION

Even though interventions are now routinely designed and implemented in healthcare, there is little to guide researchers or practitioners on how best to identify and develop these interventions in evidence based ways to maximize their likely effectiveness.[1] Systematic reviews of healthcare interventions have consistently reported that many healthcare interventions are poorly specified and haphazardly designed, limiting their generalizability, sustainability and usability in other settings.[2] The Behavior Change Wheel (BCW) model created by Michie and colleagues, was one of the frameworks developed to help bridge this gap.[3] The center of the wheel uses the

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Capability, Opportunity and Motivation Behavior model (COM-B), which recognizes that all behaviors are caused by the interaction of three major components: capability, opportunity and motivation. This helps to identify source(s) of behavior that could be targeted during an intervention. The outer parts of the wheel then provide a systematic way of identifying relevant intervention and policy categories based on what is understood about the behavior(s) underlying them.[4]

To better understand the specific factors that influence the behaviors of healthcare professionals, a related framework called the Theoretical Domains Framework (TDF) was also developed.[5] The TDF may be used together with the COM-B model, and both of these frameworks can help researchers better understand the determinants of different behaviors, and clearly identify targets for behavioral change interventions.[4,6]

The COM-B model (with or without the TDF) has been used to study a wide range of topics related to pharmacy practice, and in several cases identify and design interventions targeted at improving these issues. It has been used to explore issues around patient medication

adherence, and the potential for community pharmacists to contribute to deprescribing and antimicrobial stewardship.[7-10] It has also been used to design interventions to equip community pharmacy workers to offer smoking cessation services, enhance information exchange during over-the-counter consultations in community pharmacies, develop a capacity building program to increase the roles of pharmacists in mental healthcare delivery and minimize harms from non-recreational prescription medicine sharing by patients.[11-14]

Despite the importance of medication counselling for patients, it has been shown to be sub optimally carried out by dispensing staff in studies from all over the world, and identified as an area requiring improvement.[15-19] However, a systematic review of interventions aimed at improving patient counselling conducted by Al Aqeel et al., found that only a few of the studies included in their review used theoretical frameworks to identify or design their interventions.[20] The frameworks used to design the interventions in these studies included the stages of change model, social cognitive theory, principles of motivational interviewing and the health belief model.[20] While all of these are valid frameworks, to the best of our knowledge no study till date has used the BCW or TDF as a basis for identifying or designing interventions to improve medication counselling in any setting. Consequently, the aim of this study was to conduct a behavioral analysis and identify barriers and facilitators to optimal medication counselling using both of these frameworks, and identify evidence-based intervention strategies and policy categories that could be used to improve outpatient medication counselling by pharmacy staff in hospital settings located within Northwest Nigeria.

METHODS

Study context

Due to the poorly developed primary healthcare system within Nigeria, secondary and tertiary hospitals are often the first ports of call for individuals suffering from a wide range of routine ailments. Consequently, almost all of the public hospitals in the country have one or more specialized 'outpatient clinics or departments', where individuals can go to consult with doctors and get a diagnosis. Most of these outpatient clinics also have pharmacies located within them that handle the prescriptions and other medication related needs of these patients. These pharmacies are usually staffed by qualified pharmacists or pharmacy technicians, both of whom are expected to dispense and provide medication counselling. Although, it should be noted that there are currently no laws, guidelines or standards provided by any regulatory or professional bodies within the country specifying the structure or content of medication counselling to be provided. Similarly, there are no consequences for dispensing staff if they do not provide counselling.

Study design and population

The study was qualitative, and used semi-structured interviews to collect data from pharmacy staff working at eight public secondary and tertiary hospitals located in two states (Kaduna and Kano) in Northwest Nigeria from January to March 2020. The interviews were conducted with purposively sampled pharmacists or pharmacy technicians working at 18 outpatient pharmacies located within these hospitals. To be eligible to participate, respondents had to have worked at the pharmacy for at least 6 months, and be actively involved in day-to-day outpatient medication counselling.

Data collection instrument

The guide for the semi-structured interviews with dispensing staff was developed using the COM-B model and Theoretical Domains Framework as a guide.[4] It contained thirteen open-ended supporting questions under four main themes, and explored areas including dispenser views on their current medication counselling practices and their perceptions of selected facilitators and barriers to effective patient counselling (Table 1). It was pilot tested on four pharmacists working at a secondary hospital (not included in this study), and their responses were considered to be adequate so the instrument was not modified.

Data collection

All of the interviews were conducted by the same researcher, who is a female pharmacist with a Master's degree in Clinical Pharmacy. She was employed as a Pharmacy lecturer and researcher at a university at the time of the study, and had over five years' of experience conducting and analyzing qualitative studies.

Table 1. Interview guide	
Main Themes	**Supporting questions**
What are your general thoughts about medication counselling	Do you know what it entails? What are your thoughts about its importance? Is medication counselling easy or difficult for you to do? How does medication counselling make you feel and why? What do you think are the five most important medicines information items that most patients would need to know about their medication?
How do you feel about your current medication counselling practice	Do you feel like you are good at medication counselling? how would you rate your medication counselling skills on a scale of 1-5 and why? Do you feel like you have enough medication knowledge to counsel patients appropriately? How often do you make a conscious decision to counsel patients?
What problems do you encounter in your current workplace that affect your medication counselling, and how do they affect it?	Do you think that internal factors like size and layout of your pharmacy, staffing etc. affect your counselling? If yes, how? What other similar factors not mentioned also affect your counselling? How about other factors like patient attitudes, large patient volumes etc.?
How do you think your medication counselling practices can be improved?	Do you think additional training or incentives may be useful?
Demographic information was collected on gender, age, years of practice, position/role and educational qualifications	

Before the interviews were conducted, each of the 18 hospital pharmacies were visited, and the researcher spent a minimum of two working days (from 9 am to 2 pm daily) observing but not participating in the medication counselling activities occurring in the pharmacies. These observations helped to provide the researcher with background context and allow for triangulation of findings. Staff present in the pharmacies were not informed of the true purpose for the researchers' visit as they were told she was there to collect data about patient prescription patterns. After the observations were completed, the researcher purposefully selected two staff she observed were actively involved in medication counselling, and approached them face-to-face to participate in this study. They were informed about the objectives of the study, and told that participation was voluntary.

At every pharmacy visited, a minimum of one up to a maximum of two staff were interviewed. The interviews were conducted in private offices located within the pharmacies-borrowed by the researcher, after participants had finished their duties for the day. Only the researcher and participants were present during the interviews. Interviews were audiotaped and the researcher also took notes.

Data analysis

Data from the interviews were transcribed verbatim by one of the researchers, and checked for accuracy by another of the investigators by comparing with the original audio recordings. Since qualitative studies have no optimal sample size, initially one staff working at each of the 18 hospital pharmacies was interviewed. After the initial analysis, it was agreed that data saturation might not have been reached. Thus, seven more interviews were conducted, after which it was unanimously agreed that saturation had been reached.

Themes identified from these interviews were then deductively coded using TDF domains as a priori codes, and then mapped on to the relevant COM-B component as outlined by Michie et al.[4] Coding was done manually. It was independently carried out by the first two researchers, and confirmed by the other two; who also resolved any disagreements. Participants' quotes were used when reporting to illustrate findings and improve clarity.

The behavioral analysis was conducted as set out in a guide on how to use the behavior change wheel by Michie et al.[4] This analysis was based on the findings from the interviews, and identified areas requiring change if outpatient medication counselling was to be improved upon. Once these areas were identified, evidence-based intervention and policy functions required to support these changes were then selected from the BCW using a matrix outlined in the guidebook mentioned above.

Ethical considerations

Ethical clearance for the study was obtained from the Committee for the use of Human Subjects for Research at Ahmadu Bello University Zaria, Nigeria (Approval no: ABUCUHSR/2020/017). Written informed consent was also obtained from each participant before they were interviewed.

RESULTS

The 25 interviews conducted lasted for between 8-23 minutes. Participants were aged between 23-57 years old and were mostly female (n=17, 68%). The majority worked at tertiary facilities (n=16, 64%) and were pharmacists (n=22, 88%). Half of the pharmacist participants also had two or less years of work experience (Table 2).

Table 2.Socio-demographic characteristics of participants in the in-depth interviews (n=25)					
Respondent Code	Gender	Age	Years of practice experience	Occupation	Type of Healthcare facility
R01	M	35	<1	Pharmacist (intern)	Tertiary
R02	M	27	<1	Pharmacist (intern)	Tertiary
R03	M	35	9	Pharmacy Technician	Secondary
R04	M	23	<1	Pharmacist (intern)	Tertiary
R05	F	35	8	Pharmacist	Secondary
R06	F	26	<2	Pharmacist	Tertiary
R07	M	30	2	Pharmacist	Secondary
R08	F	28	4	Pharmacist	Tertiary
R09	F	26	<2	Pharmacist	Tertiary
R10	F	33	9	Pharmacist	Tertiary
R11	F	26	<2	Pharmacist	Tertiary
R12	F	34	9	Pharmacist	Secondary
R13	F	49	21	Pharmacist	Secondary
R14	F	42	12	Pharmacist	Tertiary
R15	M	26	<2	Pharmacist	Tertiary
R16	F	57	27	Pharmacist	Tertiary
R17	F	24	<2	Pharmacist	Secondary
R18	M	31	4	Pharmacist	Secondary
R19	M	25	<2	Pharmacist	Tertiary
R20	F	43	15	Pharmacy Technician	Secondary
R21	F	30	9	Pharmacy Technician	Secondary
R22	F	31	5	Pharmacist	Tertiary
R23	F	27	<1	Pharmacist (intern)	Tertiary
R24	F	44	17	Pharmacist	Tertiary
R25	F	25	<1	Pharmacist (intern)	Tertiary

Capability

Under psychological capability (a COM-B sub-component), three out of four TDF domains including 'Knowledge', 'Cognitive & interpersonal skills' and 'Memory, attention and decision processes' were found to be relevant to medication counselling.

TDF Domain: Knowledge: As would be expected, all of the dispensers knew what medication counselling was, and were aware of its importance in ensuring optimal patient outcomes. They were generally also knowledgeable about the various types of medicines information e.g. dosing frequency, duration, indication etc. to be provided during medication counselling. Some dispensers admitted to knowledge gaps when counselling patients about medications they had not come in contact with before or with regards to how to use some relevant drug delivery devices.

"... there are drugs during my internship program that I did not have much experience or knowledge or information about them until I started working here…. so I am still trying to interact with the senior pharmacist in the unit on the things I don't know….." (R22 Female pharmacist, tertiary facility)

"…..all of these insulin syringes (and similar items e.g. inhalers), we don't know how to use them... nobody teaches us (how to use them), so we just can't come and…...they expect us to counsel patients without knowing how to…….." (R17 Female pharmacist, secondary facility)

TDF Domain: Cognitive and Interpersonal Skills: When asked to rate their medication counselling skills, dispensers mostly rated their medication counselling as above average to very high. This was despite several remarks about the largely theoretical and idealistic nature of medication counselling training provided during undergraduate pharmacy or pharmacy technician training.

"What did they (in school) say about communication skills? They taught us how to make eye contact, body language etc. They said if you're talking to a patient, you should greet the patient... you should introduce yourself.... It is good in theory…. But real life (in our setting) doesn't give room for all of this politeness... I think that they should teach us all those proper ones (correct procedures).... but then, they should also teach us.... if you don't get an ideal environment, this is also what you can also do.... they should teach us time management, how to counsel on our feet…." (R06 Female pharmacist, tertiary facility)

Interestingly however, there were remarks from some dispensers about patients finding it difficult to understand the content of counselling, which would seem to suggest problems with counselling techniques.

"The main problem I face is that sometimes you will see that, the patients themselves have problems…. you can explain to them, but you will see signs that they do not understand you..." (R21 Female pharmacy technician, secondary facility)

"Some of the patients….. they will be confused…. and they will take your time... a lot of your time... you will be counseling them,.... telling them... but they won't understand" (R05 Female pharmacist, secondary facility)

TDF Domain: Memory, attention and decision processes: While as earlier mentioned, all dispensers were aware of the medicines information items that ideally were to be provided during medication counselling, they had difficulties prioritizing which information was more important. This could be deduced from the wide variety of responses to a question that asked them about the five most important medicines information items they felt majority of patients needed to know about their medication.

"... What amount of the drug (dose) ... Then, how often you will take the drug (dosing frequency)…. also... if the drug needs a particular timing…. for example like antimalarials... it is very important... Also, if there's any drug-drug interaction……... or if there's any drug-disease interaction too ...." (R07 Male pharmacist, secondary facility)

"I have to tell you to keep it out of the reach of children (storage conditions)…. then I have to emphasize on the way you will use your medication…….. You have to use the correct amount at the right time (dose and timing), and use it for the duration of time that you're supposed to use it …..then if after taking the medication for the time you're supposed to use it... if you don't get better, you should report…. you shouldn't just stay home…" (R25 Female intern pharmacist, tertiary facility)

Opportunity

Both the physical and social opportunity sub-components of the COM-B model were found to be relevant to medication counselling. Under the TDF domain 'Environmental context and resources', various factors including high workload, inadequate staffing, small size and poor layout of the hospital pharmacies where they worked were all found to adversely affect medication counselling. Under the "Social influences" TDF domain, lack of social support from patients and poor modelling behavior from other (often senior colleagues) were all identified as factors adversely affecting medication counselling.

TDF Domain: Environmental context and resources: Dispensers identified several factors within their pharmacies as affecting their medication counselling practices. They complained of the small sizes and poor layouts of the pharmacy units, which in many cases did not allow for adequate privacy when counselling some patients or their caregivers.

"The pharmacy I work in is very small… I would have loved to have a wider office where my patients could have a seat, and we could do face to face counseling… but right now if we allow all

of our patients to come in, the place will be congested and we won't even be able to breathe... so that's why sometimes we do window dispensing which I don't really like….” (R12 Female pharmacist, secondary facility)

“Privacy is very important…. that is one of challenges we face in our pharmacy.... Sometimes when they (female patients) have urinary tract infections (UTIs) or Pelvic inflammatory disease (PID) and it is necessary to treat both spouses……. Because our patients are all crowded together by the dispensing and counselling point, male spouses in particular often look very uncomfortable when you are counseling their wives and them... Assuming there was a private space, where both of them could sit…. I don't think this would be a problem….” (R22 Female pharmacist, tertiary facility)

Other barriers included inadequate staffing and large patient volumes, which put a lot of pressure on the dispensers and caused many of them to rush through medication counselling, since they did not have enough time.

“Actually, I do not enjoy medication counselling here because we have very little time to do it. This is as a result of the number of patients that we see every day…. when you try to counsel one patient the other patient is already waiting…..” (R24 Female pharmacist, tertiary facility)

“Our pharmacy is one of the busiest (in the hospital), so we see a lot of patients on a daily basis... and we don't have adequate manpower... so at times you are just in a hurry to handover the drugs to the patient and attend to the next patient…” (R08 Female pharmacist, tertiary facility)

There were also comments about how poor availability of counselling aids and other related equipment contributed to difficulties in medication counselling.

“Sometimes we don't have equipment…….. if you want to counsel patients properly, there are some things you need to show to them, and these instruments ideally should be made available …. (R04 Male intern pharmacist, tertiary facility)

“Sometimes we need to Google information, and most times the equipment we need to do so are not there... If they can provide these things, it will go a long way... In cases where we cannot even counsel e.g. for people that are impatient, we could print the information out for them and tell them to find the time to go through it…..” (R16 Female pharmacist, tertiary facility)

TDF Domain: Social influences: Under this TDF domain dispensers highlighted two major barriers, a lack of positive role models within their pharmacies/ institutions and poor social support for their medication counselling from patients.

1. Modelling: Several dispensers suggested that there was a lack of positive role models with regards to medication counselling, and this affected their own counselling practices.

“(To improve his medication counselling)…. I need mentorship from senior pharmacists... for them to do it practically and then we can see it……” (R04 Male intern pharmacist, tertiary facility)

“(In this hospital)……we do not tell a patient what their medicines are supposed to treat… because here we never saw that kind of thing done (by senior pharmacists). Our job is just to dispense medicine to the patient, and tell him how many tablets he is supposed to use and how many times a day he is supposed to take it... we didn't see anyone try to make the patient understand (any additional information)…..” (R03 Male pharmacy technician, secondary facility)

2. Social support from patients: Dispensers generally acknowledged that several factors including complicated hospital processes made life difficult for patients, and often ensured that by the time they got to the pharmacy they were tired, impatient and not interested in medication counselling. However, for several of them this type of behavior from patients still affected their medication counselling.

“Some patients, don't give you room to counsel them. They will tell you “I've been taking this drug…. I know how to take it”... so you have the information, you have something to impart to them…. But they don't want to give you room….” (R11 Female pharmacist, tertiary facility)

“The patients…. some of them come with issues on their minds. Some because of the long queues (to see doctors, pay for prescriptions etc.), others because of stress... when they come here, you will be talking and you will see it in their faces (that they are not listening)….. Some will even tell you “have you not written it? Just write it and give me”…. I have encountered that quite a lot” (R01 Male intern pharmacist, tertiary facility)

Motivation

Here, both automatic and reflective motivational processes were found to be relevant to medication counselling. Six out of eight TDF domains namely: 'Social or professional role and identity', 'Emotions', 'Beliefs about consequences', 'Intentions', 'Reinforcement' and 'Beliefs about capabilities' were coded under this group.

Medication counselling was identified by respondents as an important professional role. For many of them, it also evoked a positive emotional response when they realized that their medication counselling helped a patient to use his/her medication properly. While most of them were aware of the consequences of not properly counselling patients, some respondents reported that their colleagues had poor counselling intentions. There were also complaints about lack of incentives to facilitate medication counselling and some dispensers seemed to suggest that

dispensers' lack of confidence could be a barrier to counselling.

TDF Domain: Social or professional role and identity: Medication counselling was adjudged to be an important professional role and a major identifying trait of pharmacy professionals by all respondents.

"That (medication counselling) is the real work I see myself as doing…….anybody can give you a drug but when it comes to counseling that is where it is important for only pharmacists to be the ones to dispense drugs….." (R18 Male pharmacist, secondary facility)

"I enjoy counselling…. because it differentiates me from people who did not go to school…. you are held in high esteem…." (R21 Female pharmacy technician, secondary facility)

TDF Domain: Emotions: For many respondents, medication counselling was associated with positive emotions, especially when they felt like they were helping to improve patient outcomes.

"You know when someone looks at you with wonder (after counselling)…. It is just liberating…. and you know that the person is going to get the full effect of the drug…. That is the pharmacy (profession) for me…" (R06 Female pharmacist, tertiary facility)

"I enjoy medication counselling a lot…. Because they (the patients) look happy and you are happy. You also know that they will take their medicines the way you tell them and…. that you are helping them….." (R17 Female pharmacist, secondary facility)

TDF Domain: Beliefs about consequences: The majority of dispensers acknowledged that patients usually did not know much about their medicines, and that medication counselling was often not carried out by prescribers. They were also very well aware of the negative consequences to patients when medication counselling was not carried out properly.

"If a pharmacist dispenses a drug without proper counseling... everything will just be in vain…. Like for instance, if a drug is prescribed and you do not tell the patient how the drug should be taken…. e.g. if the drug is meant for insertion into the rectum and you just give it like that to the patient, the patient may decide to swallow it, and the aim of treatment will be defeated…." (R07 Male pharmacist, secondary facility)

"Here, many patients don't even know what they're taking, so if you don't tell them…. they can even take the whole thing at once and you know what that can cause…. If you don't counsel them, there will also likely be no compliance or they can take an under dose or they will overdose, and it will be harmful to their health….." (R18 Male pharmacist, secondary facility)

TDF Domain: Intentions: While a few dispensers reported taking personal steps to ensure that they could properly counsel patients (e.g. trying to learn more about medication they did not know much about), others reported that some of their colleagues did not have similar intentions.

"From the pharmacist's side, I think some of us don't want to (counsel). They think that it (medication counselling) is just (to tell a patient) take one tablet or take two tablets, they don't actually stay and explain…. It is not supposed to be (that way)…" (R23 Female intern pharmacist, tertiary facility)

"Sometimes…. we have nonchalant attitudes on our part, on the part of the pharmacists…. Some don't really care whether they do it (medication counselling) or not……. this is also (a problem)…." (R12 Female pharmacist, secondary facility)

TDF Domain: Reinforcement: There were also some comments about a lack of incentives to facilitate medication counselling.

"We don't get incentives… Other hospital departments are given incentives…. we, on the other hand get nothing…. When I first started working, we used to be given some small incentives… but now, you have to do everything yourself…. we just work with no respite…... if you don't enjoy your job, you are not likely to perform to your fullest ability….." (R21 Female pharmacy technician, secondary facility)

TDF Domain: Beliefs about capabilities: Several respondents also identified confidence as a factor affecting medication counselling.

"…. Many of the issues around counselling have to do with pharmacists not having the full confidence to express themselves or to even tell the patient what the drug is all about…." (R08 Female pharmacist, tertiary facility)

"If you want to counsel a patient, you must be confident too…. And we lack that…. You must have confidence……. be bold enough to talk……" (R11 Female pharmacist, tertiary facility)

Behavioral analysis

Results from the interviews were then used to conduct the behavioral analysis, which revealed that changes were required in five COM-B components and eight TDF domains, if medication counselling was to be improved (Table 3). Seven out of nine Behavior Change Wheel intervention functions were also identified as relevant (Table 3). These intervention functions were; Education (defined as increasing knowledge), Training (defined as imparting skills), Environmental restructuring (defined as changing the physical or social context), Enablement (defined as increasing means and reducing barriers to improve capability), Incentivisation (defined as creating an expectation of reward), Coercion (defined as creating an expectation of punishment or cost) and Modelling (defined as providing an example for imitation).

Table 3. Combined linkages between the COM-B model, relevant TDF domains and recommended intervention functions

COM-B component identified in the behavioral analysis	TDF Domain	What needs to change for the target behavior(s) to occur	Recommended Intervention functions
Psychological capability	Knowledge	Dispensers need to have better knowledge of some drugs and devices	Education
	Interpersonal & cognitive skills	Dispensers need to develop improved patient counselling techniques and skills	Training
	Memory, attention & cognitive processes	The cognitive processes in dispensers associated with remembering what medicines information to provide to patients need to be simplified	Training, Environmental restructuring, Enablement.
Physical opportunity	Environmental context & resources	Staffing needs to be improved upon, Pharmacy units need to be restructured to allow for better privacy etc.	Training, Environmental restructuring, Enablement.
Social opportunity	Social influences	Dispensers need to have more positive role models for counselling within their units and get better cooperation for counselling from patients	Environmental restructuring, Modelling, Enablement.
Reflective motivation	Social or professional role & identity	No change was needed here.	
	Beliefs about consequences	No change was needed here.	
	Intentions	Improve the intentions of dispensers to counsel	Education, Incentivisation, Coercion, Modelling.
	Beliefs about capabilities	Enhance dispensers confidence to engage in counselling	Education, Modelling, Enablement.
Automatic motivation	Reinforcement	Increase incentives for dispensers to engage in medication counselling	Training, Incentivisation. Coercion, Environmental restructuring.
	Emotions	No change was needed here	

With respect to policy, three out of seven policy categories were identified as necessary to support the delivery of these intervention functions. These included Guidelines (Creating documents that recommend or mandate practice), Environmental/social planning (Designing or or controlling the physical or social environment) and Regulations (Establishing rules or principles of behavior or practice).

DISCUSSION

During this study, a behavioral analysis using both the BCW and TDF was carried out, and intervention strategies that could be used to improve outpatient medication counselling within hospital pharmacy settings in Northwest Nigeria identified.

While some interview-based studies have earlier reported a range of barriers to medication counselling, none of these studies used the BCW/TDF combined framework.[21,22] This likely led to the identification of a wider range of potential barriers to medication counselling in our study, than has been reported in the literature. Despite this, several of the interview themes identified as counselling barriers during the first step of this analysis-especially those under the opportunity sub-component (i.e., inadequate time, poor privacy etc.), in addition to others like lack of dispenser knowledge, skills or confidence have all been reported as barriers to medication counselling in other studies from Nigeria and around the world.[21,22-24]

Other themes identified during this study as potential medication counselling barriers that have not been widely reported include absence of role models, lack of interest by some pharmacists, difficulty prioritizing the information to be provided during counselling and lack of incentives. An

explanation for these findings, might be that these are issues encountered only in developing settings like ours. This assertion is supported by the fact that most of these issues have also been reported as counselling barriers in a study from Ethiopia-another developing country.[24] In addition, three out of four of these themes (with the exception of problems prioritizing counselling information) have also been identified as barriers to the provision of pharmaceutical care or counselling in other studies carried out within the country.[25-27] These issues are likely caused by the absence of laws regulating medication counselling and mandating minimum counselling standards within Nigeria, which ensure that medication counselling is largely left to the personal discretion of pharmacy staff and is often not prioritized or rewarded.

A systematic review by Al Aqeel et al., reported that the most frequently used intervention strategies to improve patient counselling were educational meetings, materials and outreach visits.[20] Feedback, guidelines, local opinion leaders and provision of materials targeted at patients were also common strategies used by researchers in the studies they included. These are somewhat similar to several of the intervention and policy functions identified during this study (i.e. education, training, modelling, enablement and guidelines) as being potentially effective in improving medication counselling. Our findings also seem to suggest that interventions to improve medication counselling need to consist of several diverse components as opposed to focusing on just a few aspects (usually educational), which has been reported as a common shortcoming of counselling improvement interventions.[20]

While this study has several strengths including the fact that a fairly large number of staff from a variety of hospitals within Northwest Nigeria were interviewed, and novel

theoretical frameworks were used for the analyses. It should still be noted that the extent to which these findings may be generalized is arguable, although we believe that our findings are representative of our setting, and can be extrapolated to other developing countries. Similarly, it is also important to note that almost half of the interviewees had two or less years of experience, which may have influenced their perspectives. Further research on the usefulness of the identified intervention functions in improving medication counselling is also recommended.

CONCLUSIONS

Findings from the behavioral analysis revealed shortfalls in dispensers' capability, opportunity and motivation with respect to outpatient medication counselling. To improve, change was identified as necessary in eight TDF domains including 'knowledge', 'interpersonal skills', 'memory', 'environmental context', 'social influences', 'intentions', 'reinforcement' and 'beliefs about capabilities'. Seven intervention functions and three policy categories were also identified as relevant. Consequently, multi-component interventions combining several of the intervention functions identified are recommended for hospital authorities and other relevant stakeholders to improve patient medication counselling.

CONFLICT OF INTEREST

The Authors declare that they have no conflicts of interest to disclose.

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Formal analysis: SNAA, SM, NMD, KSL.
Investigation: SNAA.
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Supervision: SM, NMD, KSL.
Visualization: SNAA.
Writing – original draft: SNAA.
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