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# THE INTERSECTION OF TRADITIONAL AND CONVENTIONAL MEDICINES: HEALTH WORKERS' AWARENESS OF HERB-DRUG INTERACTION IN KABWE URBAN, ZAMBIA

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## Abstract

*This study aimed to assess the awareness of the interaction between herbal medicines and conventional medication among health workers in Kabwe and how this influenced their healthcare provision. The current increase in the use of herbal medicines can result in herb-drug interaction, which could remain unidentified due to the limited knowledge of healthcare providers on herb-drug interaction and its effects. The views of health personnel on the matter, and the concern about the consumers of the medicines formed part of the assessment. The researchers used questionnaires, interviews and desk research to gather the relevant data. Responses were received from the 40 respondents to whom the questionnaire was administered, and 10 participants in the interviews indicated that even though the majority of the respondents /participants knew about the availability and use of herbal medicines, some of them had limited knowledge of the safety and effects of herb-drug interactions. The study concluded that the limitation in the knowledge of herb-drug interaction among some health workers was detrimental to the health of the common citizenry who continuously consumed herbal medicines concurrently with prescribed conventional ones. The non-disclosure of herbal medicine use by patients to their physicians exacerbated the seriousness of the concerns raised. Researchers recommend the need to sensitise the local community in Kabwe on the safety and effects of herb-drug interaction,* health workers training institutions to incorporate the subject of herb-drug interactions in the curricula *and to subject the supply of herbal medicines to the Zambia Medicines Regulatory Authority (ZAMRA).*

***Keywords**: Herbal* Conventional *medicines, Herb-drug interaction, Health workers, Kabwe, Zambia.*

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## 1.0 INTRODUCTION

Herb-drug interaction awareness among health workers is a phenomenon that may be received with mixed perceptions. Although Herb-drug interactions may be of great interest currently, for some reasons there has been little exploration around the scourge and if there are any reports available in Zambia, the content may not be tangible enough. The fact that herbal medicines vary in composition and concentration makes it difficult to pinpoint their interactive profile (Gouws and Hamman, 2020).

Herbal medicines may be defined as products from plant materials used for therapeutic purposes (Hasen & Hashim, 2021). The herb-drug interaction is the outcome reaction that occurs when herbal and conventional drugs are consumed concurrently. The effect may either be synergetic or detrimental to both the herbal and conventional drug or even bring about new undesirable results. For instance, herbal-drug interactions have been reported to cause hypersensitivity reactions, midterm and extended effects on different organs encompassing renal, liver, cardiac and neurotoxicity as well as teratogenic and genotoxicity in several victims (*Ibid*). The effects of herbal-drug interaction may, therefore, require emergency care, additional health care staff to attend to the emergences and additional drugs, which are more often expensive to reverse the effects. In some cases, loss of lives may occur. All these effects can result in detrimental consequences to national resources, communities and families. Additionally, the effects may constitute a lot of strain on the health workers' practice.

The awareness of Herbal-drug interaction among health workers has, of late, become something of paramount significance. The need for herbal medicine safety monitoring within the existing pharmacovigilance system through the active involvement of health professionals is a dire requirement. Unfortunately, there seems to be a general lack of awareness among health professionals about the safety and risks surrounding the use of herbal medicines in Kabwe Urban; hence, the need to assess the levels of awareness of herbal-drug interaction among health workers.

Guided by the Knowledge-Attitude-Practice theory, the main aim of this article is to interrogate the health workers' awareness of the interaction between herbal medicines and conventional drugs and the risks thereof, with particular reference to the Kabwe Urban in Zambia.

## 2.0 STATEMENT OF THE PROBLEM

The concomitant use of herbal medicines (HM) and conventional drugs is a widespread practice in many communities, including Zambia. This practice carries a significant risk of herb-drug interaction (HDI), which can lead to server clinical consequences such as toxicity, reduced drug efficiency, hypersensitivity reactions, and even loss of life. These adverse outcomes not only endanger patient health but also place an additional strain on healthcare resources and personnel.

In Zambia, particularly in Kabwe Urban, the practice of traditional medicine is increasing despite advances in conventional medicine. Health workers are at the frontline of patient care and play a critical role in pharmacovigilance, including identifying and mitigating potential HDIs. However, there is a concerning indication of a general lack of awareness among health professionals regarding the safety and risk associated with the concomitant use of these medicines. Without adequate knowledge, health workers cannot educate patients, screen for potential interactions, or manage adverse events effectively.

This lack of awareness poses a direct threat to public health. Therefore, it is imperative to assess the levels of knowledge, attitudes, and practices of health workers in Kabwe Urban concerning HDIs to determine the extent of the problem and inform necessary interventions.

## 3.0 THEORETICAL UNDERPINNING AND RELATED LITERATURE REVIEW

### Knowledge-Attitude-Practice (KAP) Framework

This study is anchored on the Knowledge-Attitude-Practice (*henceforth, KAP*) Framework. The KAP Framework is a theoretical model used to understand the relationship between knowledge, attitude and practices related to behaviour. Much contemporary scholarly work seems to have insistently referred to John Marshall, Everett Rogers and Albert Bandura as key figures behind the application of this theoretical framework. Marshall (1950) first developed the KAP framework in the context of the family planning and health education. Building upon Marshall's work, Rogers (1962) developed the framework further to emphasise the role of communication in changing knowledge, attitude and practices. A decade later, Bandura (1977) contributed to understanding the KAP framework through his social learning theory, highlighting the importance of observation, imitation and reinforcement.

Since then the theoretical framework has been widely used in health education, promotion and research, particularly in developing countries. While it may have certain limitations, such as simplifying complex behaviour, not accounting for external factors influencing behaviour ( such as environment, and social norms) and assuming a linear relationship between knowledge, attitude and practice, the KAP framework remains a useful tool in understanding the relationships between knowledge, attitudes and practices related to health behaviour. This is because of the overshadowing strength of the framework in emphasising the importance of knowledge and attitude in shaping behaviour, its usefulness in designing health education programmes and its simplicity and intuitiveness.

## 4.0 REVIEW OF RELATED LITERATURE

### 4.1 Herb-Drug Interactions

Zeping Hu *et al* (2005) have observed that an extensive review of the literature reported herb-drug interactions with clinical significance. They, however, assert that more of the reports documented are in the form of case reports than clinical observations.

The duo contends that herbs are often administered in combination with therapeutic drugs, raising the potential of herb-drug interactions. One example of documented herb-drug interaction reports constitutes cases of enhanced anticoagulation and bleeding involving patients on long-term warfarin therapy who also took Salvia miltiorrhiza (Zeping Hu *et al., 2005*). Other reported cases involving Allium sativum (garlic) which decreased the area under the plasma concentration-time curve (AUC) and maximum plasma concentration of saquinavir, sativum which increased the clotting time, normalised ratio of warfarin and caused hypoglycaemia when taken with chlorpropamide. Zeping Hu *et al.* (2005) further reveal that *Kava* enhanced the hypnotic effect of alcohol in mice, though they note that this was not observed in humans. They observed that Silybum marianum (milk thistle) decreased the trough concentrations of indinavir in humans and that piperine from black (Piper nigrum Linn) increased the AUC of phenytoin, propranolol.

Izzo & Ernst (2009) also observe that the clinical importance of herb-drug interactions depends on many factors associated with the particular herb, drug and patient and that the interactions between the two types of medicines may lead to serious clinical consequences. Given the reported prevalence of herb-drug interaction, Zeping Hu *et al* (2005) suggest that herbs should be appropriately labelled to alert consumers to potential interactions when concomitantly used with drugs, and recommend consultation with general practitioners and other medical caregivers.

Izzo & Ernst (2009) have also noted the widespread concomitant use of herbal medicines and pharmacotherapy. Their reviewed literature to determine the possible interactions between seven popular herbal medicines (ginkgo, St John's wort, ginseng, garlic, echinacea, saw palmetto and kava) and conventional drugs. Case reports or case series suggest interactions of St John's wort with adrenergic vasopressors, anaesthetics, bupropion, buspirone, ciclosporin, eletriptan, loperamide, nefazodone, nevirapine, oral contraceptives, paroxetine, phenprocoumon, prednisone, sertraline, tacrolimus, theophylline, tibolone, tryptophan, venlafaxine and warfarin. They noted that while the significance of many interactions is uncertain, several interactions, particularly those with St John's wort, may have serious clinical consequences.

Another study conducted by Chen XW *et al* (2012) revealed the use of herbal medicines in combination with conventional drugs, which they said gave rise to the potential for harmful herb-drug interactions. The duo argues that the underlying mechanisms for most reported herb-drug interactions are not fully understood, and pharmacokinetic or pharmacodynamic mechanisms are implicated in many of these interactions. They observe, in particular, that for instance, enzyme induction and inhibition may play an important role in the occurrence of some herb-drug interactions. They contend that because herb-drug interactions can significantly affect circulating levels of drugs and, hence, alter the clinical outcome, the identification of herb-drug interactions has important implications.

### 4.2 Side Effects of Herb-Drug Interaction

Tsele-Tebakang, Morris-Eyton & Pretorius (2023) carried out research in South Africa to investigate the side effects people experienced while using prescribed medicines. The study made a number of revelations. Among them was that herbal medicines (*henceforth, HM*) was popular and emerged the mostly used in the community and society at large, and that people had shared a great deal of information about medicinal

plants or herbs among themselves, based on the historical African cultural way of sharing information about medicinal herbs orally from generation to generation. The trio observed in their study that during the discussion, Focus Group (FG) participants confirmed the co-administration of HM and prescribed medication, which they said validated that the concomitant use of HM and Conventional Medicine (*CM*) was common practice among patients. According to the trio, the validation of the concomitant use of HM and CM highlighted the importance of educating patients about the dangers associated with it. They noted that various advertisements on the radio and television were used to raise awareness about the concomitant use of these two medicines and the possible dangers or side effects this could cause to people, for better-compliance.

### 4.3 The Awareness of Herb-drug Interaction (HDI)

In South Africa, Tsele-Tebakang, Morris-Eyton & Pretorius (2023) conducted research on the herb-drug interaction, and their findings revealed that there was a lack of knowledge and awareness of the risks that may be associated with the concomitant use of HM and prescribed drugs. Their study revealed a low awareness level of herb-drug interaction with 98% of participants mentioning that they were not aware of the potential interaction of herbs and prescribed conventional medication. The trio, therefore, demonstrate that patients in South Africa did not have knowledge of HDIs and that there was a need for continuous education of patients about HDIs. Reasons for the low awareness, as cited by participants in the trio's study, were that patients did not disclose the use of HM to their Health Care Providers (*HCPs*) and that they were not forthcoming with their use of HM when consulting in the Primary Health Care (*PHC)* clinics. Participants also attributed the cause to the perceived unpleasant behaviours of PHC nurses. For instance, they cited doctors and nurses not having time to explain patients' conditions and treatment during consultations, which was attributed to the few HCPs having to deal with the volume of patients in a short time, staff absenteeism and burnout. The trio finally observed that education about the use of HM required a sensitive approach that depended on listening and spending quality time with the patients and that HCPs needed to discuss and share information about the benefits and risks of the medicines given to patients as part of the consultation services provided.

In Zambia, a study was conducted by Namuyaba Hamanyanga in 2019 on the perspectives of health workers on traditional medicine integration into conventional medicine in selected health facilities in Zimba District. The author observed that over the years, many researchers have tried to address how to integrate traditional medicine with conventional biomedical diagnoses and that while some countries have combined both traditional medicine (TM) and conventional medicine (CM), others have not. She has noted that in many African, South American and Asian countries, TM is used concomitantly with conventional medicine and that this often comes with considerable difficulties. She says this is particularly true for what may be considered indigenous diseases that may not easily relate to a conventional diagnosis and pose issues regarding patient-centred communication. Hamanyanga noted that with the current situation in Zambia, some integration between the two systems needed to be encouraged because the practice of traditional medicine in the country was on the increase, despite the great advances in orthodox medicine. Her study mainly explored attitudes towards the integration of TM and CM, assessing the perceived benefits and risks of TM and understating the motive behind referring patients to traditional healers. The study targeted health workers among them nurses, doctors, clinical officers and community

health assistants, with the majority of the respondents in the study (45%) being community health assistants.

Hamanyanga's (2019) study revealed that most of the respondents (75%) believed some illnesses were caused by supernatural powers such as witchcraft and that TM had the power to cure illnesses such as epilepsy, STIs *et cetera*. Furthermore, her study established that the majority of health workers supported the integration of TM and CM. Additionally, the study established that most of the health workers interviewed were comfortable referring a patient to try TM in instances where CM failed. Hamanyanga's study further revealed that TM use was characterised by uncertainties in terms of its benefits and risks and that there was no government policy to support the integration of TM with CM.

### 4.4 Knowledge Gap

Existing global and regional literature, including studies in South Africa (Tsele-Tebakang, Morris-Eyton & Pretorius, 2023), has well documented the prevalence of HDIs and a general lack of awareness among both patients and healthcare providers. Within Zambia, prior research by Hamanyanga (2019) explored health workers' perspectives on the integration of traditional and conventional medicines, focusing on attitudes, perceived benefits, risks and referral motives.

However, a critical gap remains. No known study in Zambia has specifically investigated health workers' awareness of herb-drug interactions. Hamanyanga's work, while valuable, does not address specific knowledge gaps, attitudes, or practical competences health workers possess regarding the pharmacological and clinical implications of patients using both medicine types simultaneously.

Furthermore, there is a distinct lack of context-specific research on this subject within Kabwe Urban. This study seeks to fill this void by moving beyond general integration debates to directly assess the awareness levels of HDIs among health workers in this specific region, thereby providing fundamental data that is currently absent in the Zambian medical and pharmacological literature.

## 5.0 METHODOLOGY

The study population was the health facilities of Kabwe district: nurses and other experts in the health care field. Methodologically, the study used a mixed-methods approach, combining both qualitative and quantitative methods. For the qualitative data, both interviews and participant observation methods were applied. Concerning the interview, a purposive sampling method was used in selecting a total of 10 participants from 5 health facilities within Kabwe Urban. First, a snowball sampling technique was applied where the researchers started by contacting one 'key informant' that they already knew to be well knowledgeable in the identified categories of information required in the study, based on the two guiding criteria of '*health worker or expert in the field*' and '*substantive employee within Kabwe district'*. The selected informant was asked to nominate another potential informant. The technique went on and on till the saturation point was reached at 10 participants, which was enough for data analysis. This made the chance of reaching out to targeted participants willing to cooperate with

the researchers much higher than if there was some kind of direct relation (Blumberg *et al.*, 2014) and enabled the study to generate a sample size that would otherwise be difficult to obtain (Hachintu, 2024; Hachintu, 2025). The 10 participants were subjected to Key Informant Interviews (KIIs) for in-depth interrogations of the subject matter under study, through which detailed qualitative insights were obtained. The required primary data were collected through open-ended interview guides.

The observational method was used to observe health workers' practices and interactions with patients in three healthcare facilities within Kabwe town, to gain a deeper understanding of their awareness and management of herb-drug interactions.

As regards the quantitative method, a cross-sectional survey was carried out in which a structured and semi-structured questionnaire was administered to Forty (40) respondents among health workers in the health facilities of Kabwe Urban, to obtain the required quantifiable information.

Further, secondary data were used to some extent in this study, in backing the primary data that came from the field and these were accessed in literary sources pertinent to the study. Secondary data analysis as applied in this methodology, helped generate new insights required by the research (Heaton, 2008; Johnston, 2012; Smith, 2008). In this regard, the researchers were careful, throughout the study, to ensure that there was a match between the research objectives and the existing data for careful reflective examination (Hachintu, 2023).

### 5.1 Data Analysis

This study adopted a qualitative-dominant mixed-methods approach. The qualitative component was primary, while the quantitative component was supplementary and descriptive in nature.

Qualitative data from the 10 key informant interviews, open-ended questionnaire responses, participant observation field notes, and relevant desk research documents were analysed thematically. Interview recordings were transcribed verbatim, and transcripts were read repeatedly to ensure familiarity with the data. Initial codes were generated manually, and these codes were grouped into meaningful categories and themes. The coding process was both deductive and inductive: deductively, it was informed by the Knowledge - Attitude - Practice (KAP) framework; inductively, it allowed unexpected themes to emerge from participants' accounts. Themes were reviewed, refined, and supported with verbatim quotations. Pseudonyms were used when reporting findings to protect participants' identities. Secondary/desk research materials were analysed through content review and used to contextualise and triangulate the primary findings.

Quantitative data from the structured and semi-structured questionnaire administered to 40 respondents were coded, entered into Microsoft Excel, cleaned, and analysed using descriptive statistics. Frequencies and percentages were computed for demographic characteristics, professional designations, awareness of herbal medicine availability, perceived safety and risks, and simple quantifiable items such as the number of health staff at health posts. The results were presented in tables and figures. Because the quantitative component was supplementary, the sample was small, and the study was predominantly exploratory, no inferential statistical tests were performed. The

quantitative findings were therefore used only to describe patterns and provide contextual magnitude.

The qualitative and quantitative data were integrated at the interpretation stage. Descriptive counts and percentages were used to show the extent or distribution of particular responses, while the qualitative themes were used to explain the reasons, experiences, and practices behind those responses. This integration enabled methodological triangulation and provided a fuller understanding of health workers' awareness of herb-drug interactions.

However, the study has potential limitations such as focusing on descriptive statistics instead of complex statistical models. This is due to the small sample size for quantitative analysis, resulting from the fact that the study is predominantly exploratory in nature.

Table 1: **Summary of Participants / Respondents by Method Used**

| **Research Method Used** | **No. of participants / Respondents** |
|---|---|
| Interview | 10 |
| Observation | ( applied to those interviewed) |
| Cross-sectional Survey (Questionnaire) | 40 |
| Total | **50** |

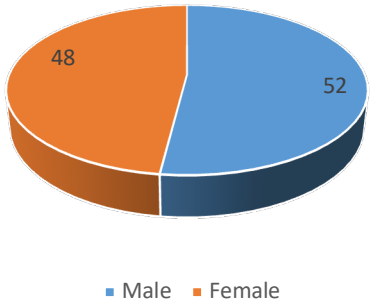
## 5.2 Demographic Characteristics of the Participants

The total number of participants/respondents in the research was 50. Out of this figure, 26 were male representing a percentage of 52% and the 24 participants were female, representing a percentage (48%) composition.

Table 2: **Summary of the Gender Participation**

| | | **Frq** | **%** | **Valid %** | **Cum %** |
|---|---|---|---|---|---|
| Validity | M | 26 | 52.0 | 52.0 | 52.0 |
| | F | 24 | 48.0 | 48.0 | 100.0 |
| Total | | 50 | | 100.0 | |

Fig. 1: **Participation by Gender (%)**



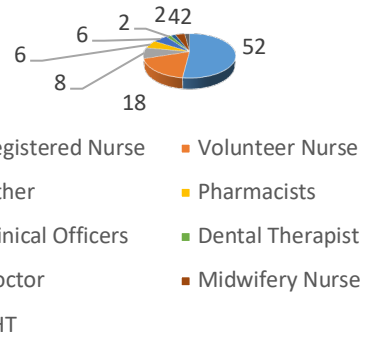

## 5.3 Official Designations of the Participants in the Study

The table below shows the distribution of participants/respondents according to their designations at their workplaces:

Table 3: **Summary of Respondents Distribution by Nature of Work**

| | | Frq | % | Valid % | Cum % |
|---|---|---|---|---|---|
| Validity | Registered Nurse | 26 | 52 | 52 | 52 |
| | Volunteer Nurse | 9 | 18 | 18 | 70 |
| | Other | 4 | 8 | 8 | 78 |
| | Pharmacists | 3 | 6 | 6 | 84 |
| | Clinical Officers | 3 | 6 | 6 | 90 |
| | Dental Therapist | 1 | 2 | 2 | 92 |
| | Doctor | 1 | 2 | 2 | 94 |
| | Midwifery Nurse | 2 | 4 | 4 | 98 |
| | EHT | 1 | 2 | 2 | 100 |
| | **Total** | **50** | **100** | **100** | |

Fig 2: ***Respondents /Participants' Designation (%)***



## 5.4 ETHICAL CONSIDERATIONS

The study carefully observed and adhered to ethical precepts such as informed consent, confidentiality, and anonymity at all stages to build trust and confidence among respondents and participants (Kumar & Mandhar 2020; Kang 2023). Three ethical considerations; 'informed Consent', 'voluntary participation', and 'respect for privacy', were applied.

Informed consent: Consent for participants to take part in the study was sought from the local authorities and public health institutions while the proposal for the study was cleared of any human subjects' rights infringement by the Research Ethics Committee of the University of Zambia. Researchers ensured that participants understood the study's purpose and benefits.

Voluntary participation was sought to ensure that participants were not coerced or pressured into the study. Respect for privacy was also sought to maintain confidentiality and protect participants' information. The participants agreed to be interviewed on condition that their identity (in terms of their names) was not disclosed.

## 6.0 FINDINGS AND DISCUSSION

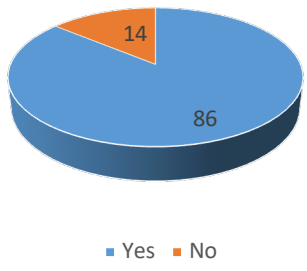
### 6.1 Participants / Respondents' Knowledge of the Availability of Herbal Medicine

Participants/respondents were asked whether they were aware of the availability of herbal medicines in the local markets or outlets and their use in their respective communities. The table below provides a summary of their responses:

Table 4: **Awareness of the Availability of Herbal Medicine**

| Responses | Frq | % | Valid % | Cum % |
|---|---|---|---|---|
| Yes | 43 | 86 | 86 | 86 |
| No | 7 | 14 | 14 | 100 |
| Total | 50 | 100 | 100 | |

*Fig 3: Awarness of Herbal Medicines (%)*




Source: Field Data

The summary both in the table and the figure above shows that 86 % of the total responses were in their native while 14% were not aware of the availability of herbal medicines on the local market in their respective local communities.

## 6.2 Herbal Medicine Availability Awareness at Workplaces / Health Facilities

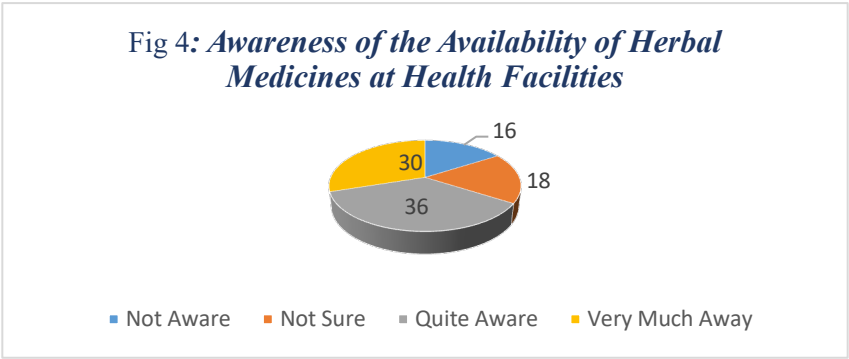
As regards the extent to which the respondents/participants would ascertain 'other' members of staff's awareness of the availability of herbal medicines at various health facilities, a variety of responses were given, as tabulated below:

Table 5: **Awareness of Medicine among 'Other' Staff at Workplaces**

| | | Frq | % | Valid % | Cum % |
|---|---|---|---|---|---|
| Valid | Not Aware | 8 | 16.0 | 16.0 | 16.0 |
| | Not Sure | 9 | 18.0 | 18.0 | 34.0 |
| | Quite Aware | 18 | 36.0 | 36.0 | 70.0 |
| | Very Much Away | 15 | 30.0 | 30.0 | 100.0 |
| | Total | **50** | **100.0** | **100.0** | |

Source: Field Data

Fig 4: *Awareness of the Availability of Herbal Medicines at Health Facilities*




Sixteen per cent (16%) of the respondents/participants said they were not aware whether their colleagues at the workplaces had any information about the availability of herbal medicines in the local market, while 9 % were not sure. However, eighteen per cent (18%) said they were quite aware, while 15% of the respondents said they were certain that almost all fellow members of staff at their workplaces were aware of the availability of herbal medicine on the common market.

## 6.3 The Safety and Risky Concerns Around the Administration of Herbal Medicines

Data collected from 50 informants showed that at least 33% of them were aware of the availability of herbal medicines on the market (i.e. 18% quite aware; 15% very much aware). When asked for their views relating to the safety and risks surrounding the administration of herbal medicine concurrently with conventional drugs, they admitted that it was not safe. They said whilst the taking of herbal medicines could give advantages to some consumers, its consumption also carried some risks, which included side effects, inaccurate dosages given by the sources, consumers failing to comply with directives from suppliers on the use of the medicines, and so on. One interviewee said:

> *I don't have much to say about the risks of taking herbal medicines. I can only relate to expectant mothers for now. When expectant mothers take HMs, chances of having complications at delivery are high. They*

> *might have what we call a raptured uterus… the baby might also have difficulties in breathing due to the severity in terms of contractions (Interview with a* Midwifery Nurse*, Kabwe town, August 19, 2024).*

With special reference to pregnant women, previous studies conducted in various sub-Saharan African countries have found the prevalence of herbal remedies to be high, although the use of herbal medicines varied widely across different studies. For instance, the study by El Hajj *et al.* (2020) indicates that all studies carried out in Zambia's bordering countries found a prevalence rate above 40%. In a study from Harare, Zimbabwe conducted in 248 pregnant women at 12 antenatal clinics, a 52% prevalence was noted. In a more recent study from rural Zimbabwe in 398 women, 69.9% reported to have used traditional medicine during pregnancy and childbirth. Similarly, a study from Mbeya, southwest Tanzania conducted in 400 pregnant women found a 55% prevalence.

El Hajj *et al.* (2020) further reveal that there is an information bias associated with a lack of disclosure of herbal medicine use to researchers, particularly when a respondent is interviewed in a healthcare setting. Her study indicates that more than two-thirds of users admitted that they did not disclose their use of herbal medicine to their healthcare providers.

If these indications are something to go by, then there should be reason to justify the concerns raised by participants in the current study about the significant association of herbal medicine use during pregnancy with the possible prevalence of HDI cases in Kabwe.

Another interviewee recounted:

> *Taking herbal medicines concurrently with conventional ones is not safe at all!.. We have seen a lot of herbal medicines that are sold on the common markets; some people say they are safe, while others complain about their efficacy. But where I have a challenge is the issue of dosage. You know, these are drugs and too much of a drug carries the risk of causing toxicity. When the drug enters the body, the first organ that receives it is the liver. Now, when someone consumes a drug in high dosage, it damages the liver (Interview with a Clinical Office, Kabwe General Hospital, August 21, 2024).*

Dr. Mbilo (*pseudonym*) narrated:

> *There are some risks, especially regarding inaccurate information on the dosages from suppliers and the failure of consumers to comply with the administration of these medicines. In the process, some patients end up overdosing themselves. I remember one time one consumer came to ask me how to use them but I said..aaash.. I am not aware of these. The client said she had forgotten the explanation from the supplier (Interview with Dr Mbilo, Kabwe Mine Hospital, August 27, 2024).*

Dr Mbilo made crucial additional submissions similar in context with what three other participants said in the interviews, that whilst conventional medicines pass through scientific laboratories for testing a lot of considerations are taken in administering - such as the age ranges of patients to avoid the eminent risk of having side effects, this is not the case with the herbal medicines. In their view, herbal medicines were not safe to use and they encouraged people to use drugs that are well screened with proper instructions written on them regarding their use.

## 6.4 Other Health Care Provision Concerns on the Administration of Herbal Medicines

Respondents in the current study raised many issues relating to the use of herbal medicine as far as the public health care provision in Zambia is concerned. Some were concerned that the dealers in herbal medicines were supposed to work hand-in-hand with trained personnel in health facilities. Others expressed concern about the instructions on how consumers can use the herbal medicines. These, in the respondents' view, were issues of concern in Kabwe, and Zambia in general. Another general observation from respondents' submissions was that there was no strong formal sensitisation of the public on the availability and use of HM so that people would know the value of it. Perhaps some form of care and support needed to be provided, such as in the form of providing regulatory mechanisms, as one interviewee observed:

> *What we need to realise is that even these conventional medicines come from the same herbs, the only difference is that they pass through the labs and their dosages are weighed, Besides, we have in place the Zambia Medical Regulation Authority which is mandated to ensure that regulatory measures are enforced - whiles for the herbs, the estimations of dosages are based on a T-spoon and there is no formal regulatory authority preside over the concerns relating to their supply (Interview with a Volunteer Nurse, Kawama Clinic, Kabwe, August 20, 2024).* ..

Many sentiments that came through the questionnaire from the survey were consistent with the observations from the pharmacist in the following interview:

> *What I would add is that people in the communities should know how to use herbal medicines. This is because the consumption of any medicines, be it an orthodox/conventional drug or herbal, is normally based on such considerations as age range, and the patient's condition such as health status or whether one has hypertension. These considerations are imperative in determining the type of medicine that is not contra-indicated especially with people with conditions (Interview with a Pharmacist, Kabwe town, August 24, 2024).*

Another participant narrated thus:

> *There is also a need to launch an advocacy that herbal medicines pass through the lab for testing and regulatory measures should be imposed on their dosages. People should also be sensitised about the importance of going to the hospitals when they fall sick to get safe medication or prescriptions to obtain these conventional medicines, either at the counter or drug stores. This is important because these drugs are*

*filtered in the liver and the liver is put in the drain when the drug is not well measured against the type of patient (Interview with a Registered Nurse, Mukobeko Clinic, Kabwe, August 21, 2024).*

### 6.5 Findings of the Current Study and Recent Reports: The Nexus

The importance of herbal medicine safety monitoring has been highlighted in many recent findings and has become a burning concern for both the general public and national regulatory authorities. As a result, the World Health Organization has strongly warned about the safety monitoring of herbal medicine within the existing pharmacovigilance system and highly recommended the involvement of health professionals for appropriate monitoring of the safety of herbal medicines.

The findings of the current study are consistent with Hasen & Hashim's (2021) findings which indicated that health professionals working in the world, particularly in developing countries, have limited awareness regarding monitoring of the safety of herbal medicine. Thus, assessing the awareness of health professionals regarding the safety of herbal medicine is very crucial, which should facilitate the development of a national pharmacovigilance system for herbal medicines. It should also highlight the urgency of providing training regarding the safety of herbal medicine for health professionals, especially in a low-income country like Zambia, thus helping create adequate awareness of the safety of herbal medicine among health professionals.

The revelations from the current study, therefore, agree with recent reports that have evidenced the importance of enhancing the awareness of health professionals about the use of herbal medicines for making better informed decisions, establish health education programs and effective herbal medicine regulatory measures. These findings should strengthen the recommendations already highlighted by the WHO that has indicated the importance of involving health professionals in monitoring of the safety of herbal medicine.

## 7.0 CONCLUSION

The current study investigated the awareness of herb-drug interaction among health workers in Kabwe urban, based on the Knowledge-Attitude-Practice theory. The KAP theory is a useful tool in understanding the relationships between knowledge, attitudes and practices related to health behaviour. It emphasises the importance of knowledge and attitude in shaping behaviour, and therefore, usefulness in designing health education programmes (Marshall 1950; Rogers 1962; Bandura (1977).

The study has revealed that the role health workers play in the Primary Health Care (PHC) provision in society is quite critical and that the awareness by health workers, of HDI and its associated risks is crucial in curbing the potential dangers imposed by the scourge to the general health of citizenry.

The study has further revealed that even though some health workers in Kabwe Urban were aware of the HDI, there was still a considerable percentage (14%) of those who lacked the knowledge of the scourge and its associated risks, which remained a matter of concern to the authors. It was further revealed that despite the many health workers being aware of the HDI, they kept the knowledge to themselves since there were no official efforts made or affirmative actions taken to utilise their knowledge for the benefit of the general citizenry in Kabwe, who continued in the habit of using herbal medicines

concomitantly with conventional drugs. The situation in Kabwe remained helpless with potential risks of the HDI, such as the affected expectant mothers risking having complications at delivery, herb-drug overdoses resulting in some toxicity, *et cetera*. These could be avoided or abated by instituting official affirmative actions, such as sensitised the public about the importance of going to the hospitals when they fall ill in order to get safe medication or prescriptions to obtain conventional drugs and verbal medicines from registered outlets; advocacy for herbal medicines to pass through the lab for testing and place the supply of herbal medicine under Zambia Medicines Regulatory Authority.

These findings, therefore, seem to be consistent with the theory used, to the extent that the knowledge of the HDI was necessary in helping consumers of the herbal medicines acquire the necessary understanding of the HDI associated risks that would affect their consumer medical-seeking behaviour and attitudes towards the scourge. However, the findings do not seem to agree with the theory when applied in the context of those health workers who claimed to be aware of the HDI but kept the knowledge to themselves. By not influencing the expected health behavioural change, their acquisition of the knowledge about HDI could be deemed inconsistent with the expected attitude, in the context of the KAP theory.

## Recommendations

Based on the study findings, the authors recommend the following:

### *Recommendations for further study*

- To conduct another research targeting the victims of the HDI

### *Recommendations for Government Action through the Ministry of Health*

- To place the supply of herbal medicines under the Zambia Medicines Regulatory Authority (ZAMRA) to ensure that all herbal medicines and allied substances consistently meet expected set standards of quality, safety and efficiency

- To institute a sustainable Ministry of Health-led sensitisation aimed at raising awareness about the herb-drug interactions among communities of Kabwe Urban

- To request institutions that train health workers to incorporate the subject of herb-drug interactions in the curricula

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