Research paper

Exploring the safety and clinical use of herbal medicine in the contemporary Ghanaian context: A descriptive qualitative study

Lydia Aziato*, Philippa N.A. Odai

Department of Adult Health, School of Nursing, University of Ghana, Legon, Accra, Ghana

ARTICLE INFO

Article history:
Received 28 January 2016
Received in revised form 5 March 2016
Accepted 21 November 2016
Available online 22 November 2016

Keywords:
Herbal medicine
Herb safety
Herb quality
Integrated medicine
Ghana
Qualitative study

ABSTRACT

Many individuals remain skeptical about the safety and use of herbal medicine thereby slowing the efforts being made to integrate herbal medicine into Ghana’s healthcare system. This study sought to provide an in-depth description of the clinical use of herbal medicine in Ghana through interviews with participants at two locations—a national research centre and a private clinic. The study adopted a descriptive qualitative design involving individual patient and key informant interviews. Data were collected from 13 key informants. Interviews were audio-taped and transcribed verbatim. Data analysis was conducted applying the procedures of content analysis. Two major themes were generated, focusing on the production and processing of herbal medicine and its use. The sub-themes generated were production of herbs and herbal medicine; analysis of herbal products; training of herbalists; ‘client assessment’, herbal medicine treatment decisions and adjuvant therapy. It was realized that there were difficulties acquiring sustainable raw materials for herbal medicine production. Quality aspects include the input of research institutions and regulatory bodies to ensure that safe herbal products are used, and the formal training of herbalists. Patients at the study locations are assessed using orthodox means and may be treated with adjuvant therapies as well as herbal medicine. The themes raised provide insight into the issues and possibilities of integrating herbal medicine into a wider healthcare system.

© 2016 Elsevier GmbH. All rights reserved.

1. Introduction

The use of herbal medicine for treating various ailments has received a lot of attention in recent times. There is evidence that herbal medicine is used in many countries with some level of integration into the traditional health care system (Allam et al., 2014; Bensoussan et al., 2004; Hu and Chung, 2015; Tabuti et al., 2003b). The increased use of herbal medicine has seen a proliferation of herbal medicine producers and vendors (Quiroz et al., 2014). Some of these producers and vendors do not have equal knowledge and skills, creating concerns about the safety of herbal medicines (Cooke et al., 2012). In view of this, many countries have regulatory bodies that regulate the practice of herbal medicine (Govindaraghavan and Sucher, 2015; Moss et al., 2007; Zöllner and Schwarz, 2013). Research institutions mandated to investigate herbal medicines have over the years supported confidence in herbal medicine through rigorous scientific research into various aspects of herbal medicine. These studies have identified the active ingredients in various parts of plants and also investigated the toxic effects and safe dosages of herbal medicine. Most of these studies were carried out using animals (Flower et al., 2012; Thomas, 2011).

In order to make the production of herbal medicines sustainable, the raw materials must be readily available. But there are reports that certain medicinal plant species are becoming extinct because of over harvesting, which depletes natural habitats (Yao et al., 2013). Forest degradation and effect of bush fires have also negatively impacted on the availability of the raw materials of herbal medicine. Furthermore, since certain plants thrive better under specific geographic or climatic conditions, changes in rainfall patterns and vegetation can threaten their survival. Another problem of herbal medicine production is contamination caused by the use of unhygienic water for irrigation during cultivation (Zhang et al., 2012).

Contemporary herbal medicine production may involve a series of steps in the processing of the raw materials to obtain a desired product (Van Wyk, 2011; Zhang et al., 2012). Some production processes involve the extraction of active ingredients which are then packaged as desired. The packages are labeled and these are sold to clients according to need (Govindaraghavan and Sucher,
2015; Othman et al., 2015; Soares et al., 2014). However, some herbal medicines are used in their raw state in homes, while others may be boiled, dried or added to alcohol based drinks for use (Cano and Volpato, 2004; Ndhlala et al., 2011; Neamsvun et al., 2012; Tan and Freathy, 2011). The large scale production of herbal medicine requires stringent measures to ensure that the products have the desired efficacy and safety (Zhang et al., 2012). The safe use of herbal medicine demands that herbal medicine producers/herbalists are always formally trained, as some of them have previously learned the profession informally from other herbalists. Also, some herbalists who have formal education have a further challenge in calculating dosages and labelling locally prepared herbal products (Harman, 2007; Okanlawon et al., 2011).

The use of herbal medicine at the clinic in contemporary times involves thorough case history taking and laboratory and radiological examinations to guide treatment decisions (Amoah et al., 2014; Guangyi et al., 2009). These developments, coupled with improved packaging of herbal medicine, have contributed to its increased use. Some modern herbal clinics have facilities for adjuvant therapies such as massaging (Dodds et al., 2014; Core-Felton et al., 2003), which seems to enhance attendance at herbal clinics. It is therefore not surprising that some countries have integrated herbal medicine into their national health system (Chang et al., 2016; Lao and Ning, 2015).

There is a paucity of studies on herbal medicine that give an in-depth description of the safety and usage of herbal medicine within the contemporary health system. This report focuses on the safety and use of herbal medicine in Ghana. It forms part of a wider study that also investigated herbal medicine users’ perspectives on facilitators and inhibitors of herbal medicine use in Ghana.

2. Methods

2.1. Design and setting

This study adopted a descriptive qualitative design to investigate the safety processes and clinical use of herbal medicine in a national research centre (Centre for Scientific Research into Plant Medicine, Mampong, located in the Eastern Region of Ghana) and a private herbal clinic (Top Herbal Clinic, Agbogba, Accra). These two settings provided in-depth understanding into the phenomenon under investigation. The national centre for research into plant medicine was established in 1975 to basically conduct scientific research and development of herbal medicine. The centre is a Government establishment which is an agency of the Ministry of Health. The centre is mandated to ensure the efficacy, quality and safety of herbal medicine. The private herbal clinic was established in 1996. The clinic has its own herbal production unit where only herbal products are prescribed. Both the private clinic and the research centre run a herbal clinic on out-patient basis for clients from various parts of Ghana.

2.2. Sampling and data collection procedure

A purposive sampling technique was used to identify key informants and clients who use herbal medicine. Permission was obtained from the leadership of the two organizations. The first author, who is experienced in qualitative data collection, conducted all the interviews. Open ended questions were used to generate detailed descriptions on the safety and clinical use of herbal medicine. Individual face-to-face interviews were conducted and lasted between 20 and 30 min each. All the key informant interviews were conducted in English and the patient interviews were conducted in English and Twi (an Akan language most commonly used in the southern two-thirds of Ghana). The interviews were recorded with a digital audio-recorder. The interviews conducted in English were transcribed verbatim and those in Twi were translated into English. The interviews were conducted at the convenience of the participants.

2.3. Data analysis

Data were analyzed following the processes of content analysis to identify themes and sub-themes that describe the phenomenon under study. The transcripts were read until a full understanding was achieved. They were then coded and similar codes were grouped to form themes and sub-themes that fully described the safety and clinical use of herbal medicine. The data was managed with the NVivo software version 10.

2.4. Trustworthiness of the study

Trustworthiness of the study was achieved through the maintenance of detailed field notes which enabled follow-up on gaps in the data. Member checking and follow-up on description of processes achieved in-depth description of safety and clinical use of herbal medicine. An audit trail was kept that enhanced the verification of findings from this study. Many descriptions of findings are provided to provide the necessary context for application of findings in other similar contexts.

2.5. Ethical considerations

Ethical approval was obtained from the Institutional Review Board of the Noguchi Memorial Institute of Medical Research for a wider ongoing research of the first author. Permissions were obtained from the two study sites. All participants gave their informed consent to participate in the study. The right to withdraw, confidentiality and anonymity were emphasized. Identification codes, such as TMK11 to TMK113, were used to present verbatim quotes.

3. Findings

3.1. Characteristics of study participants

This study involved 13 key informants: 6 patients, 3 herbal medicine practitioners, 2 herbal scientists and 2 herbal sales representatives. Two herbal medicine practitioners were from a private herbal clinic, Top Herbal Clinic, Agbogba, Accra and 2 herbal scientists and a herbal medicine practitioner were from the Centre for Scientific Research into Plant Medicine, Mampong. The two herbal medicine sales representatives worked with the private herbal clinic. All the participants were adults aged 18 years and above.

Two major themes were generated in this study: The first theme was production and processing of herbal medicine, and its sub-themes were production of herbs and herbal medicine, analysis of herbal products and training of herbalists. The second theme was usage of herbal medicine and its sub-themes were client assessment, herbal medicine treatment decisions and adjuvant therapy.

3.2. Production and processing of herbal medicine

This theme describes safety issues in the production and processing of herbal medicine including the role of regulatory authorities and training of herbalist to ensure that herbal medicine products are safe. The challenges of herbal medicine production are described. The sub-themes related to these dimensions of herbal medicine are described.
3.3. Production of herbs and herbal medicine

Participants were of the view that plants or herbs used for the production of herbal medicine should be cultivated in special farms in areas where the plant or herb thrives, so that this will provide typical raw materials for the production of herbal medicine.

'We have the plant development department and they are responsible for growing some of these potential plants. The farmlands are in areas where the plant thrives. So this is also in place to provide sustainable supply of raw materials to the production unit' (TMKI1).

A concern of herbal medicine producers in this study was difficulty in access to raw materials including parts of trees. Therefore, there is the need to cultivate more plants to sustain the herbal medicine industry.

'Herbal medicine is not like the orthodox one which we can just do some chemical formation and just reproduce on a large scale; . . . our problem is getting the raw materials; We are not planting more trees and the existing trees or the parts of trees that are being used is quite difficult to get; there are some medicines that destroy the tree slowly; . . . we have to really go into cultivating the plants that we use' (TMKI3).

Participants suggested that those harvesting raw materials for herbal medicine from the forest should be cautioned to limit their actions to prevent forest depletion.

' . . . we must ensure rational usage of the forest; because just as we are collecting these herbs from the forest, we must also be forest friendly so that we do not deplete the forest' (TMKI1).

Participants also suggested that those who use herbs grown in poor environments or with unclean water should desist from this practice.

'It's not good to collect herbs from the roadside, from dirty environment or to use unclean water for the herbs/plants because the herbs will be contaminated' (TMKI1).

Herbal medicine institutions in this study produced their own herbal products and only these are dispensed from their herbal clinics.

'We produce the drugs ourselves at the production site and we use them in our clinic. We prescribe only our medicines in our clinic. We do the titration so we know the amount of active ingredient that is in the herbal drug' (TMKI3).

The herbal drugs are packed in boxes from the production site to the clinic and stored in a cool dry place. The products are then displayed on shelves for sale to clients.

'Well we store the drugs at a cool dry place. We pack them in boxes from the production site to the store room and issue to the dispensary as our stock run out. The drugs are arranged on shelves for sale' (TMKI4).

3.4. Analysis of herbal products

Key informants at the national centre of research into plant medicine confirmed that herbal products from the centre are investigated before they are dispensed to the public for specific purposes. The investigation into herbal products is done in laboratories and with the use of animals.

' . . . we have pharmacology and toxicology lab, the phytochemistry lab, the microbiology lab, the quality assurance lab and the other supporting units where we evaluate the efficacy and quality of the herbal medicine to ensure that we achieve our goals in the area of trying to formulate or develop herbal medicines to be used in the primary health care delivery system in Ghana. . . . we carry out animal model testing to measure the efficacy of the herbal medicine and based on the results, we carry the message and predict what is likely to happen' (TMKI1).

The national research centre for plant medicine also investigates all types of herbal products of other herbalists across the country. The assessment establishes the active ingredient, microbial load and contaminant.

' . . . other people bring their herbal medicines that they want to sell either in the form of decoctions and ointments and balms. All products with herbal bases are brought here and we carry out tests on them to find the active ingredient in the drug, the microbial load and contaminant. That is the preliminary test we carry out on every medicine to see that it is safe to be used by humans. We also do the chronic or the long-term effect evaluation' (TMKI3).

It was realized that the research centre into plant medicine works in close collaboration with the national Food and Drugs Board (FDB) to ensure the safety of herbal products in Ghana. After the initial analysis by the research institute, the report and sample are sent to the FDB and they also conduct further investigation at the production site and a report is sent to the standard Board for a final certification.

'All the herbal medicines we receive are screened here before they go to the Food and Drugs Board; . . . we carry out research on it to see whether it was safe, long term effect and shelf life. The producer takes our report to Food and Drugs Board plus the sample of the product. The FDB also look at production site to assess what goes on there and then their report is sent to the Standard Board for final investigation and licensing' (TMKI3).

With all these assessments, certified herbal products are considered safe and this was perceived to enhance usage of herbal products.

' . . . So now we have improved herbal medicine; so it is not only just gathering the medicine from the bush; but, it also takes a scientific form. So people are now coming to the herbal clinic and are accepting herbal medicine because of the improvements that have come with its production' (TMKI3).

3.5. Training of herbalist

To further ensure the safety of herbal products, the national research centre also organizes periodic training for herbalists, especially producers without formal education, to enhance safety practices.

'Most of the herbalists I must say have no formal education but now these individuals come for courses here. So that we teach them about how to go about things to make the herbal product quite safe' (TMKI3).

Training in safety measures was necessary because some herbalists acquired their knowledge of herbal medicine informally from their forefathers or through dreams, and may not have knowledge of drug safety.

'Some herbalist without formal education knew the medicines maybe from their forefathers or they learned it through dreams as they claim so we need to train them to make the product safe' (TMKI3).

It was noted that herbalists without formal education employ people who have knowledge of herbal medicine to assist in the production of herbal medicine.

Now, we have herbalists who have no formal education but they employ people that are knowledgeable in herbal medicine such as those trained in herbal medicine at the tertiary level from KNUST.
(Kwame Nkrumah University of Science and Technology) to enhance the current demand of herbal medicine production and usage' (TMK13).

Apart from the national research centre, other herbal producers also train their staff (such as sales representatives) to improve their knowledge of herbal medicine and ultimately enhance the safety of herbal products usage.

‘We the sales reps were trained here and they gave us certificates. We were trained because we need knowledge on herbal medicine and we also read books to add to our knowledge’ (TMK16).

3.6. Usage of herbal medicine

This theme describes the clinic-based administration of herbal medicine including patient assessment through history taking and laboratory and radiological investigations. Herbal medicine treatment decisions and adjuvant therapy are also described.

3.7. Client assessment

Herbal medicine providers assessed their clients through asking a series of questions to fully understand the problem of the client so that the appropriate herbal drug will be prescribed. ‘We do thorough history taking to know what is wrong with the person before we administer drugs to them’ (TMK14).

Assessment of clients at the herbal clinic also included checking of the vital signs and weight and this was confirmed by clients at the herbal clinic. The assessment also guided adjuvant therapy in addition to the herbal medicine.

‘...the client comes in with a folder to see the consulting nurse so she checks the vital signs before they come and see me for treatment’ (TMK12).

‘Sometimes when you attend, they check your weight and if the weight is not okay, they put you on diet in addition to the herbal medicine’ (TMK18).

Herbal medicine practitioners request laboratory and radiological investigations to further confirm the problem of some clients before prescribing a herbal medicine. The investigations ensure that the right herbal drug is administered.

‘...the client sees a herbal medicine practitioner and depending on the complaints, a lab investigation is requested or he/she may do other investigations. ... then based on the results, we prescribe herbal medicine from our dispensary’ (TMK12).

‘Before we give you drugs for menstrual pains, we do investigations and a scan because if you have fibroid or an ovarian cyst, the menses could be painful’ (TMK14).

Some herbal clinics have their laboratory and scanning facilities as confirmed by clients in this study. ‘...the herbal hospital has a lab and a scanning machine and they used it to scan me before my treatment’ (TMK18). Some clients were encouraged to undergo laboratory tests to aid diagnosis. ‘The herbal medicine practitioner said I should come here for lab test so that they can identify whatever is wrong with me’ (TMK13).

Some herbal practitioners assessed previous results of clients who report to the herbal clinic and carry out further assessments as necessary. ‘The herbal medicine practitioner asked me about my previous experience and my previous lab and scan results when I reported to the clinic with menstrual pain and they did another scan before treating me’ (TMK18).

3.8. Herbal medicine treatment decisions

Clients may receive herbal drugs from either a single herb or a mixture of different plants depending on the problem presented. The quantity and type of herbal medicine prescribed depended on the client’s preference, how far away they lived from the clinic and cost of the medicine.

Basically we mix decoctions from different plants or from a particular plant; but depending on what they want because some prefer to have an enema; ... the issue has to do with the quantity because you may need more than 1 bottle. ... we give more than 3 bottles of decoctions depending on where you come from and clients’ affordability (TMK12).

Consistent with the above, there was an element of flexibility in the prescription of herbal medicine so that clients buy the quantity they can afford.

‘...our services are flexible because when you charge some people the whole package they will not be able to afford it; so, we prescribe as they can afford and let them buy bit by bit’ (TMK14).

Some herbal practitioners confirmed the use of combination of different decoctions for different health problems such as infertility.

‘Infertility has different drugs and they are combination of drugs so we put you on those drugs and we monitor you every 2 weeks to 1 month until the client takes seed’ (TMK14).

Herbal medicine was obtained from licensed producers and sold at pharmacy shops. ‘At times we have people who are on contract with us who come to take our medicines and go and sell them in their pharmacy shops’ (TMK13).

3.9. Adjuvant therapy

In addition to the herbal medicine, some clients, especially those in pain undergo other forms of therapy such as massaging. After a period of massaging, further assessment is done to determine treatment actions.

‘Apart from the lab and giving the herbal medicine, we let some patients go for the massage. We have a massaging machine here. The machine massages for about 45 min for a session and assess the effect on the patient and depending on the feedback, we plan further care. ... we use the massaging for elderly people with pain, those with severe body and back pain’ (TMK14).

Some clients were given ‘blood tonics’ in addition to herbal medicine for specific health problems such as malaria and typhoid. The ‘blood tonics’ are also herbal formulations.

‘... we give blood tonic for some conditions like malaria and typhoid. Some patients buy it from the retail shops or buy it from here. The blood tonics are also herbal in nature’ (TMK14).

4. Discussion

This study has highlighted the need for herbal medicine producers to cultivate medicinal plants for the sustainable supply of raw materials (Kala, 2015; Komlaga et al., 2015; Lubbe and Verpoorte, 2011). The study showed that medicinal plants should be cultivated under the right climatic or geographic conditions. This may mean that herbal medicine producers should collaborate with cultivators from other geographical areas for continuous supply of the herbs/plants needed (Kala, 2015; Lubbe and Verpoorte, 2011). The herbalists also believe that in the absence of any afforestation and reforestation policy, overharvesting of medicinal plants could deplete the forest of rare and endangered species. It implies that reforestation is necessary to sustain the
herbal medicine business (Phondani et al., 2016). Some participants detested the cultivation of herbs/plants in dirty environments. They believed that the use of unclean water in the cultivation of herbs could lead to infections due to contamination during production.

The raw materials were processed into different herbal medicine formulations. These herbal formulations were labelled and packaged and distributed to various sale points and stored in a cool dry environment. The contemporary processing of raw materials for herbal medicine followed complex mechanized procedures to produce herbal formulations such as tablets, capsules and ointments. It was noted that research institutions investigate the active ingredients of raw materials for herbal medicine through rigorous scientific processes and determine the toxicity of such products. Regulatory bodies required herbal medicine producers to establish measures that assure the safety of herbal drugs from the raw material state to the finished product including packaging and storage.

It was reported that herbalists were trained to increase their knowledge in applying safety measures which supports findings of previous researchers (Tabuti et al., 2003a). Some herbalists have no formal education and are not knowledgeable in drug safety including dosage and toxicity (Cooke et al., 2012; Okanlawon et al., 2014). It is important for herbalists to be trained to understand the diseases they profess to cure and how to make their herbal drugs safe for use (Kalaiselvan et al., 2015). Herbalists without formal education collaborated with trained herbal medicine practitioners to ensure that their products met the safety standards. Also, sales representatives of herbal products were trained to gain knowledge in the safe use of herbal medicine. This finding is important because uninformed vendors can give the wrong drug or recommend a wrong dosage that can result in complications (He, 2013).

Herbal medicine practitioners in this study assessed their clients through case history taking and laboratory/radiological investigations. This is consistent with contemporary herbal medicine practices globally (Awoah et al., 2014; Guangyi et al., 2009). A thorough assessment informed the treatment options. The assessment of clients is important in clinical practice because it informs the practitioner how to take the most appropriate action (Cushing and Papsin, 2015). It is necessary to provide privacy during case history taking so that the client can give the right information (Jin, 2012). The assessment should include previous and current medications the client is taking to inform treatment decisions, as some clients combine pharmaceutical and herbal medicine (Gardiner et al., 2007; Murthy et al., 2015; Picking et al., 2011; Ried, 2015). The use of laboratory and radiological investigations could allow validation of the effectiveness of herbal medicine as the evidence of cure with herbal medicine can be verified (Bieski et al., 2015; Halberstein, 2005; Kim et al., 2015; Pichini et al., 2015). Also, using the laboratory and radiological assessment for clients could allow integration into the existing health system because these assessment criteria are also used by the biomedical practitioners (Peters et al., 2002).

The type of herbal medicine administered was dependent on the clients’ preference, cost and distance from the herbal clinic of choice. Clients who access herbal services were allowed to choose the type of herbal formulation desired. This is important for involving the client in treatment choices and also to have some control over their health care (Bishop et al., 2011; Vickers et al., 2006). Perhaps this could account for the increased patronage of herbal medicine. The herbal drugs were given in portions according to the clients’ affordability. This meant that the client is not forced to buy the full dosage at a time. Those who lived far from the herbal clinic bought adequate quantities to avoid frequent travelling. These findings show the flexibility in the use of herbal medicine, which may not be the case in Western medicine where the client usually has the view that the doctor knows best (Bishop et al., 2011). The addition of other therapies and diet to herbal medicine also helped to achieve positive treatment outcomes which supports other studies (Dodds et al., 2014; Orief et al., 2014).

The main limitation of this study was the small sample size as pertains to many qualitative studies (Dodds et al., 2014; Hsueh et al., 2015). However, the aim of the study was not to generalize findings but rather to provide an in-depth description of issues of herbal medicine safety and clinical use. The study was conducted at only two sites and this may not apply to all herbal clinics in Ghana. Future studies could involve wider samples and settings to triangulate the findings of this study and provide a means of generalization. Laboratory studies can also be carried out to investigate herbal products from herbalists to validate their safety.

5. Conclusion

The use of herbal medicine for the treatment of various diseases and health problems is indispensable, as herbal medicine is the preferred choice of treatment for the majority of people around the world particularly in developing countries. The personal preferences of patients demand the availability of treatment options that include herbal medicine. Therefore, producers of herbal medicine should ensure the safety of all herbal products. The clinical use of herbal medicine in contemporary contexts require that herbal medicine practitioners include modern case assessment procedures to inform their diagnosis and treatment.

This study demonstrates some of the vital issues for consideration in creating an integrated health care system including the establishment of safety procedures, sustainable production and continuing research.

Conflict of interest

The authors declare no conflict of interest in this study.

Acknowledgements

The authors thank the officials of the two herbal medicine centres for the depth of information shared during data collection. No external funding was received for this study.

References


