

Hazardous Substances in Homemade Alcohol in Rural Areas of Limpopo Province, Republic of South Africa: A Public Health Concern

J. C. Makhubele

Department of Social Work, University of Limpopo, Turfloop Campus, South Africa
Telephone: +27 (15) 268 2291, Mobile: +27 (84) 712 2913, Fax: +27 (15) 268 2866
E-mail: Jabulani.Makhubele@ul.ac.za

KEYWORDS Harmful. Concoction. Beverages. Low-resourced Areas. Health Risk. High Behaviours

ABSTRACT The unsafe use of alcohol has now become one of the most vital risks to health. The study aimed at exploring and describing the concoctions of unsafe substances in the homemade alcohol in the rural areas. Explorative, descriptive and contextual designs were used. Purposive and snowball sampling methods were also used to select the 76 participants. Data was collected through interviews with brewers and consumers of the homemade alcoholic beverages. Thematic analysis was used. Findings indicate that foreign substances such as methylated spirits, brake fluids and battery acid were added to the homemade alcohol for commercial reasons in a way to address poverty and unemployment. The availability, accessibility, affordability and acceptability of the homemade alcohol influenced the drinking patterns. Further information is needed on the chemical composition of the homemade alcohol and its subsidiary social and health effects. It is recommended that practitioners across the disciplines in public health should carry awareness campaigns and community education on homemade alcohol.

INTRODUCTION

The World Health Organization (WHO) has outlined global strategies for the member states to decrease the harmful use of alcohol (WHO 2010; Leslie et al. 2015). Worldwide, according to the most recent estimate of WHO, 24.8 percent of the alcohol consumed is unrecorded alcohol (WHO 2014). The WHO (2014) Global Strategy calls for reducing the public health impact of illicit and informally produced alcohol, as these kinds of alcohols are largely unregulated, untaxed, and not officially recorded, and are typically made using traditional methods by the individual families or by small village factories whose facilities are often neither registered nor inspected (p. 30). One of the challenges stated in the Global Strategy is that of gathering and disseminating information about the illicit and informally produced alcohol, especially where there are still “substantial gaps in knowledge” (WHO 2010: 7) and especially in the developing countries. It is important to know as much as possible about the illicit and the casually produced alcohol in the community contexts so that policies can be developed in order to reduce the harm (Luu et al. 2014). The harmful use of alcohol is a

growing global public health priority. Alcohol consumption contributes to over 200 health conditions, including injury and both communicable and non-communicable diseases (World Health Organization 2014a). Although the causal pathways are not fully elucidated, alcohol-related harms can be occasioned by the volume of the alcohol consumed as well as through a particular pattern of drinking (Rehm et al. 2010). In South Africa, heavy alcohol consumption poses a serious risk to the public health (Ferreira-Borges et al. 2015). Although over forty percent of the men in South Africa report abstinence from alcohol, consumption is high among the drinkers. Those who drink consume an average of over 30 liters of pure alcohol (ethanol) per year (World Health Organization 2014a). Alcohol is associated with many serious social and developmental issues, including violence, child neglect and abuse, and absenteeism in the workplace (WHO 2011). Alcohol use is a product of the factors ranging from a national historical context to individual genetic predisposition. Globally, the level of alcohol consumption is associated with a greater economic development between countries and higher socio-economic status within the countries (World Health Organization 2014a). Nation-

al and local policies on alcohol cost and availability as well shape the individual consumption (Anderson et al. 2009). Individual level characteristics consistently associated with alcohol usage include age and gender. In South Africa as well as globally, alcohol consumption tends to increase with age and is much more common in men than women (Parry et al. 2005). Structural conditions such as alcohol availability comprise a second major focus of the community-level determinants of alcohol usage. Alcohol outlet density increases physical access to alcohol, which may lower alcohol prices and shape the social behaviour around drinking (Campbell et al. 2009). Ecologic studies from developed countries have shown overall alcohol consumption and alcohol-related harms to be higher in areas with superior outlet concentration (Popova et al. 2009; Leslie et al. 2015). The health promotion practice emphasizes the complex inter- action between an individual behaviour and the environmental determinants. It also recognizes that individuals are nested within families, communities, organizations, societies and the global context, and that these varied loci of existence shape health. Crawford (2006) indicates that the pursuit of health has become a highly valued activity in the modern and in the contemporary life, commanding enormous resources and generating expansive professionalization and commercialization along with the attendant goods, services and knowledge. Health has also become a central, 'signifying' practice.

In many rural areas, homemade (traditional forms of) alcohol is produced through a simple procedure of fermentation of the seeds, grains, fruits, and/or the vegetables (Makhubele 2012). These materials are usually poorly monitored for quality and strength, and are frequently contaminated and toxic (WHO 2004; Haworth and Simpson 2004). Homemade concoctions can also be more lethal than the conventional substances. Mustonen (2007) claimed that little in terms of alcohol research has been done in the rural areas from the developing countries, hence, it is argued that almost all what is presently known about the relationship between the alcohol use and the alcohol problems are based on the researches conducted in the developed countries. Yet, according to the WHO (2004) alcohol abuse is considered to be an extremely serious social problem in many developing countries. Because traditional alcoholic

beverages are locally produced in the villages and the homes, they are often outside the control of the local governments.

Due to the difficulty in collecting data for a product that is largely illegal, this issue has been largely neglected by the research community according to Haworth and Simpson (2004) and very little published materials exist on the traditional beverages, prompting the WHO (2004) to describe the source of the data as virtually entire grey literature is available on the Internet. Such research work is important because in the low- resourced areas, manufactures of the homemade alcohol utilize unorthodox and poisonous ingredients to make their brews more intoxicating (Makhubele 2012).

Background Information and Problem Formulation

Gumede (1995) states that the consumption of alcoholic beverages has a very long history in South Africa dating back to the very ancient times and furthermore, WHO (2005) indicated that alcohol use is deeply embedded in many societies, and about 2000 million people drink alcohol in most parts of the world. Due to the rapid pace of change in the economic and the social sphere and prevailing political instability in many African countries, alcohol and other psychoactive substance use and related problems are becoming major public health concerns (WHO/UNDCP 2003). According to the National Drug Master Plan (2006-2011), the unregulated use of the homebrewed alcohol requires monitoring as poisonous additives form a part of the ingredients of many types of homebrewed substances (Makhubele 2012). Alcohol has played a role in the social disintegration of the family and the community life, especially in the Black communities (Gumede 1995; Parry and Bennetts 1998). Moreover, poverty and poor education are considered to be the additional factors that contribute to the high levels of production, consumption and availability of alcohol in South Africa (Parry and Bennetts 1998, 1999; Makhubele 2012).

The UNODC-World Drug Report (2011) indicates that a stage pattern suggests that 'experimenters' begin with alcohol and tobacco, followed by cannabis or inhalants. According to the World Health Organization (2006), the eastern and the southern regions in Africa have

the highest consumption of alcohol per drinker in the world, and the prevalence of the hazardous drinking patterns, such as drinking a large quantity of alcohol per session, or being frequently intoxicated, is second only to Eastern Europe.

Peltzer et al. (2004) found that adult per capita consumption of the absolute alcohol in South Africa is between 9 and 10 litres per year, which places the country among the higher alcohol consuming nations. Alcohol may lead to health problems, social problems, morbidity, injuries, unprotected sex, rapes, violence, deaths, motor vehicle accidents, homicides, suicides, physical dependence or psychological addiction among the youths (Burke et al. 2005). It was found that

6.3 percent of all deaths in South Africa in 2004 could be attributed to alcohol, ten percent of all the deaths in males and 2.6 percent of all deaths in the females (Rehm et al. 2009b). Another big challenge associated with alcohol abuse is the sexual risk-taking behaviours. Several studies purport that there is a high prevalence of alcohol use in many African countries severely affected by HIV/AIDS (Mnyika et al. 1997; Fritz et al. 2002; Simbayi et al. 2004; Neele et al. 2006). Obot (2006) contends that numerous studies in several countries have shown an association between the harmful consumption of alcohol and health and social consequences, including death from road traffic accidents, domestic violence, HIV infection, and disorders requiring demand for treatment. Amongst others, most commonly abused substances in Africa is alcohol (Odejide 2006). Nutt et al. (2010) state that a new ranking system in the UK recognizes that the legal drugs, alcohol and tobacco, are the more harmful than most the illegal ones. Annual per capita consumption of alcohol per drinker is very high in the sub-Saharan region, at an estimated 19.5 liters (Roerecke et al. 2008) in exclusion of the home-brewed alcohol as is an area underresearched. Several studies highlight that in many developing countries the levels of alcohol consumption have increased in the recent years (Penden et al. 2000; Flisher et al. 2003; Obot et al. 2003). In South Africa, rates of heavy drinking are four to five times higher on the weekends than on the weekdays (Parry et al. 2005). In a study of 20 countries by Clausen et al. (2009), South Africa was ranked fourth highest in terms of the pro-

portion of heavy drinkers as a percentage of the current drinkers. There are a few reasons, which prompt brewers of the homemade alcohol in the rural areas of Mopani District in Limpopo Province to put in foreign harmful substances in their brews. The drive to make more money to address the problem of poverty and unemployment seem to top the list whilst some indicated that they need to ensure that their brews give the customers a sharp urge and that will motivate the customers to buy their homemade brews. Moreover, people in the rural areas prepare homemade alcohol for social and religious reasons. Effectively addressing problems requires an integrated public health and public safety approach.

Purpose and Objectives of the Study

The goal of the study focused at exploring and describing various concoctions of harmful substances in the homemade alcoholic beverages in the rural areas of Mopani District in Limpopo Province, South Africa. The objectives of the study were as follows:

- To identify and categorise the types of homemade alcohol brews.
- To describe the ingredients in preparation for the homemade alcohol beverages.
- To assess the motives behind the home brewers of alcohol for putting in foreign substances whilst preparing their homemade alcohol.
- To upsurge the collection and sharing of data on the homemade alcohol use, alcohol availability and alcohol-related harms in rural areas.

RESEARCH DESIGN AND APPROACH

In order to obtain an understanding from the perspective of the brewers of the homemade alcohol beverages, a triangulation was appropriate as explorative, descriptive and contextual design was perfect to offer rich information from the participants' perceptions and understandings within their natural setting without influencing them in any way (Babbie and Mouton 2001). In other words, it was qualitative in nature, thus providing a better insight into the production of the homemade alcohol and to generate possibilities for the future research (Babbie and Mouton 2001; Durrheim

2006). Individual interviews were used to gain a detailed picture of a participant's beliefs about, or observations or accounts of a particular subject (De Vos 2002). Contextual design has developed within the information systems design practice of the high technology industry. Contextual design is a popular human-centered design method from the field of information systems design (Beyer and Holtzblatt 1998). Contextual design practitioners herewith as social science researchers conduct focused field observations, validate or adjust their interpretations in discussion with participants (Notess 2005). People's behaviour becomes meaningful and understandable when placed in the context of their lives. Without a context, there is little possibility of exploring the meaning of an experience (De Vos 2002). The meaning of creations, words, actions, and experiences can only be ascertained in relation to the context in which they occur (Terre Blanche et al. 2006). The principle of understanding in context has a strong influence in the development of qualitative methodologies. The rationale for this methodology was also rooted in the attempt to discover valuable, practical and appropriate information regarding the types of homemade alcohols in the rural areas and the significance of this body of knowledge in relation to the social and public health and risks.

Population and Sampling

Purposive and snowball sampling were used in this research. Discussants and interviewees were nominated purposively, while others were enlisted through snowball sampling. The rationale for purposeful and snowball samples was to target individuals who could offer information to apprehend the phenomenon of the homemade alcohol production in the milieu of motives for adding in foreign and hazardous substances in the production process. The research population was, therefore, restricted to the brewers of the homemade alcohol and consumers from the rural areas in Limpopo Province. Communities, which were highlighted as the high-risk areas by SAPS in Mopani District, were selected and each person who produced the homemade alcohol was selected up until the saturation level was reached. Purposive sampling was suitable to select the exclusive cases that were especially

informative for the research (Neuman 2006). Snowball is aimed at approaching a single case that is involved in the phenomenon to be investigated in order to gain information on other similar persons (De Vos 2002). The Traditional Leaders were approached in each community and households, which made and traded the homemade alcohol, and who eventually referred the research team to other producers. The hope was that each participant would refer

the research team to the one he or she has worked with on the production of the homemade alcohol or have knowledge about who produces the homemade alcohol in the community, particularly on issues of motives for producing the homemade alcohol and the ingredients used in the preparation of the homemade alcohol. This qualitative study was ultimately concerned with information richness and not representativeness (Julie et al. 2004). Therefore, 76 persons were interviewed, out of which five were male brewers and seventy-one were the female brewers.

Data Collection and Analysis

Structured individual interviews (face-to-face) were conducted with selected persons who brewed the homemade alcohol and consumers and each referred the researcher to the next brewer of the homemade alcohol. This method was selected as it provided an opportunity to minimize the variations in the questions posed to the participants and to make sure that all the relevant topics are covered (De Vos 2002). Participants (producers/brewers of homemade alcohol) were visited at their homes and appointments were secured with each one of them. An informed consent of participants was obtained prior to the data collection. The consent form explained the purpose and the nature of the research, gave assurance of anonymity, confidentiality and the right to withdraw from the research. The aim and objectives of the research were explained and they agreed by signing the consent form. Structured individual interviews, which had mainly open-ended questions based on the underlying objectives of the research, guided the interview process. The interviews were tape recorded with the permission of the participants, transcribed and thematically analyzed. For the research team to verify and maintain accuracy, they were

guided by the viewpoint that qualitative data analysis involves bringing order, structure and meaning to the mass of the information collected (De Vos 2002). Data was analyzed thematically. Thematic analysis is a search for themes that emerge as being important to the description of the phenomenon (Daly et al. 1997). The process involves the identification of themes through a cautious reading and re-reading of the data (Rice and Ezzy 1999). It is a form of pattern recognition within the data, where emerging themes become the categories for analysis.

In support of that, Terre Blanche et al. (2006) outline these steps as follows: Step 1, is the familiarization and immersion (getting to know the data and engaging the data from the tape recorder, field notes and interview transcripts). Step 2 involves inducing themes (working with themes that are easily noticeable). These themes emanate from the data relating to the research aim. Step 3 entails coding (breaking up the relevant data in understandable means). Step 4, is elaboration (getting fresh view of the data by exploring themes more closely) and Step 5, is interpretation and checking the data (the researcher provides clarification and assessment of the data). Due to the sensitive nature of the subject, discussants and the interviewees were assured that all information provided would be treated confidentially. Subsequent discussion therefore used pseudonyms to protect their identity. An issue-focused approach was adopted in analyzing the qualitative data. This is an approach that describes what has been learned from all the informants about a particular situation (Weiss 1994). Data was coded according to the concepts and the categories used in the research, and from these, excerpt files were compiled that collected material from interviews that dealt with the same issue. Excerpts are presented using the “preservationist approach”, that is, material is presented in the original speech so as to reproduce the words recorded on tape as accurately as possible (Weiss 1994).

Ethical Considerations

Permission to conduct the study was obtained from the University of Limpopo Turfloop Research and Ethics Committee. Written consent was obtained from the participants to con-

duct the study. A covering letter explaining the purpose of the study and assuring the participants of anonymity and confidentiality was included with the letter. Participants were also informed that participation in the study was completely voluntary and that they could withdraw from the study at any stage.

FINDINGS AND DISCUSSION

It has been found that the rural areas of Mopani District have a high rate of unemployment and poverty. Community members make a living by selling the homemade alcohol. In support of this finding, Leslie et al. (2015) contend that community structural factors of poverty and volatility can destabilize the joint efficacy, while a lower collective efficacy may increase the individual alcohol use. Likewise, community poverty may affect the location of the alcohol outlets, and outlet density in each community plausibly increases the individual drinking. The prospect that an individual lives in a given community and hence, is exposed to the local alcohol outlet density and collective efficacy is a function of the individual characteristics such as: age and education, which also affect the alcohol consumption. Other individual characteristics, such as psychosocial factors, are omitted from the model due to the supposition that they do not affect the individual selection into a community and henceforth are independent of exposure. Since, this study was qualitative and employed purposive and snowball sampling methods. The researcher used a structured interview schedule so as to ensure that all the topics were covered and to minimize variations. This section gives a description of the prevailing homebrewed alcoholic beverages in the Mopani District of Limpopo Province. It gives their types (names) and ingredients as well as description of the motives for such mixing of foreign substances into the alcohol. Presentation of the results and subsequent discussions are based on the following two themes:

Homemade Alcoholic Beverages (Types, Ingredients and Methods)

Much as the health effects of these homebrewed/distilled alcoholic beverages are speculative, as they are not based on any scientific

proof, they reverberated very well with many scholars' accounts. It has been asserted that homemade alcohol may contain substances that cause severe health consequences including death (Lachenmeier et al. 2007). Several types of homemade alcohol were discovered and through interviews, description of how they are produced is presented. Unlike in Vietnam, according to Luu et al. (2014) wherein the fermentation of grains is a natural process requiring no human intervention as long as the appropriate yeasts are present, the findings from Mopani District paint a different picture as described below:

Xilungu

This homemade alcohol called *Xilungu* is similar to the well-known *Mporosi* (Makhubele 2012). In these rural communities, basically, people will use sorghum malt and water to brew *Mporosi*. It was unanimously agreed that conventionally sugar and yeast were never used, whereas nowadays some brewers add sugar, milk, ice cream and yeast. It takes seven days to prepare this home-made alcohol, as it cooked and the end products are recooked (*ku swekisa*) up until the brewer is satisfied that it is ready for consumption. It was used during the social and religious occasions and by the elders. However, of late, people add more hazardous substances to *Xilungu* such as methylated spirits and used car oil mixed with vinegar. Discussants and interviewees asserted that the *Xilungu*, which is brewed currently, is very dangerous. Almost all brewers of *Xilungu* corroborated this fact that the ingredients of *Xilungu* have tremendously changed due to the commercial reasons.

Lela Mhana wena

Lela Mhana wena, which literally means 'say goodbye to your mother', is a mixture of sorghum malt, water, sugar, battery acids, water from boiled dagga (cannabis), battery acid, ice cream, and brake fluids. After drinking it, one is certain that he or she may die. Hence the alcohol is named 'say goodbye to your mother'. Repeatedly echoed by the discussants and interviewees is that it is by the grace of God that after consuming *Lela Mhana wena* the person will survive. The reason being that the person

will start vomiting, trembling and would be unable to walk. Participants further indicated that the person would wet him/herself.

Xipayoni

Xipayoni is a mixture of sorghum malt, sugar, water, battery acids, rotten fruits particularly mangoes and king-korn. One elderly woman expressed how she prepares *Xipayoni*. It is a distilled product, as they use a drum, which is cut in half with a mounted pipe to release the steam. She said that when preparing *Xipayoni*, a person first mixes sugar, king-korn, battery acid, rotten fruits particularly mangoes, sorghum malt in warm water. Thereafter, he/she leaves the mixture overnight for the fermentation to take place. In case the fermentation is slow due to the cold, she boils the mixture to fast-track the fermentation process. The mixture is then boiled lightly on a cylindrical tank (drum cut half size). The vapour that goes up as steam is trapped under the cylindrical tank's lid and drops on the plate inserted in the tank with an outlet pipe that these drops pass through. The plate in the cylindrical tank is tied to a pipe that protrudes outside. This pipe in the middle is then tied with a half-cut tyre filled with cold water to cool the steam coming out of the tank. At the mouth of the pipe is a bottle container to collect *Xipayoni*. Seemingly different names are used in different places. The study by Pitso in Selibe Phikwe in Botswana found similar procedures of preparing what they call *skhokho* (Pitso 2007).

Motives for Mixing Foreign Hazardous Substances in Homemade Alcohol Beverages as well as Drinking Hazardous Homemade Alcohol Beverages

In the latest years there has been cumulative acknowledgement that can compel or enable numerous health behaviours, including the alcohol consumption (Jayne et al. 2010; Pearce et al. 2012; Richardson et al. 2015). Community structural work has accentuated that a multitude of social, cultural, political and economic factors interrelate in complex ways to upset the alcohol consumption, across spatial scales from the global to the local (Jayne et al. 2008). One structural factor that may influence alcohol consumption is the availability of alcohol retail

outlets. Neighbourhood availability of alcohol retailing might impact the local consumption patterns and health outcomes in a number of pathways (Makhubele 2012). Greater local availability of the alcohol retailers, and increased visibility of their advertising and promotions, can increase the physical availability of alcohol, reduce the prices of alcohol products due to the retailer competition, and shape and reinforce local attitudes and norms around the drinking behaviours and drunkenness (Livingston et al. 2007; Pasch et al. 2009, 2007; Makhubele 2012). Participants (discussants and interviewees) constantly echoed that the reasons are obvious, as they are not working. They are brewing alcohol so as to keep the fire burning in their households. Hence they used whatever will keep the customers coming to them. It has been argued that personal responsibility for health is widely considered the *sine qua non* of individual autonomy and a good citizenship (Crawford 2006). Unfortunately, different interpretations emanate when it comes to the means for survival and the health of the consumers of the home-made alcohol. This is so because they were asked whether they thought about the effects such foreign substances like brake fluids and battery acids could do to a human body. Their response was that the customers were not drinking brake fluids or battery acids but homemade alcohol in spite of what the mixtures were.

There are some pressing reasons for customers in the rural areas of the Mopani District in Limpopo Province to indulge in the home alcohol and these are availability, accessibility, affordability and acceptability due to the socio-cultural and the religious connotations to the homemade alcohol. The researcher found that in each community he had discussions with the brewers and the customers, there were no less than 40 households brewing homemade alcohol in spite of the population size of the community. With regard to the consumers, their motives for drinking the homemade alcohol beverages despite their debilitating effect were to relieve the stress, to pass time, to socialize, to enhance confidence, as a sexual stimulant and addiction, and this corroborated the findings from Botswana (Pitso 2007).

CONCLUSION

Given the high public health concerns associated with the consumption of the home-

made alcohols, further knowledge on its chemical composition is required as well as research on its links to various disease endpoints should be undertaken with priority. Alcohol and other drug problems are concerns for the public health. The 'imperative of health' is a mandate to identify the dangers in order to control them. Albeit irrefutable scientific evidence for home-made alcohol related to the health problems is lacking, closer inquiry of many accounts indicated that almost all the studied beverages have the potential for substantial negative health impacts. Some interventions to reduce the harm resulting from the homemade alcohol should already be undertaken at this point. The consumption of surrogate alcohols, (that is, non-beverage alcohols and illegally produced alcohols) was shown to

impact the different causes of death, not only poisoning or liver disease, it also appears to be a major public health problem in Russia and elsewhere. The challenges of homemade alcohol should be addressed by the primary healthcare practitioners, in collaboration with other relevant practitioners even outside the healthcare sector. The primary healthcare is responsible for the delivery of health promotions. Health promotion in South Africa should be based on a multidisciplinary and inter-sectoral collaboration. It has been recognized by the governments (national, provincial and local) that good health and wellbeing rely on a range of factors, many of which lie outside the health sector itself. The civil society should also partner with the public sector in ensuring that not only urban areas are reached but the rural areas are equally serviced as well. Health promotion based on the Ottawa Charter is an important core intervention strategy within the South African National Health System. It also forms a central framework for the action to improve health within the policies of the national, provincial and local governments. The key social determinants of health in South Africa include low levels of literacy, especially among the women, poor sanitation and inadequate nutrition. These factors are linked to poverty, and to address them requires continued commitment and collaboration among the relevant government and private sectors.

RECOMMENDATIONS

This research has discussed the concoctions of the homemade alcohol beverages in

the rural areas of Mopani District in Limpopo Province as the basis for practice in the helping professions. The article has pointed out the types and ingredients for various homemade alcohols as well as the motives for producing such alcohols. Moreover, levels of intervention and underlying socio-cultural values, norms, practices, beliefs and customs that a helping professional should take into account when dealing with the African clients. The main thrust in this discourse has been health and social hazards with regards to the homemade alcohol precipitated by adulterated African socio-cultural beliefs, which informs the behaviour of the African clients, particularly when Africans face health and psychosocial challenges that the life presents to them. Helping professionals should know African socio-cultural beliefs in order to appreciate what informs the behaviours of its African clients. The present study provides just a microcosm of the likely alarming homemade alcohol beverages related problems in the country. Based on the above findings and conclusions, it is recommended that the funding for a research and capacity building for health promotion, social determinants of health and policy building with special reference to homemade alcohol be considered.

REFERENCES

- Anderson P, Chisholm D, Fuhr DC 2009. Effectiveness and cost-effectiveness of policies and programmes to reduce the harm caused by alcohol. *Lancet*, 373: 2234–2246.
- Babbie E, Mouton J 2001. *The Practice of Social Research*. Cape Town: Oxford University Press Southern Africa.
- Beyer H, Holtzblatt K 1998. *Contextual Design: Defining Customer-centered Systems*. San Francisco, California: Morgan Kaufmann.
- Botswana. *African Journal of Drug and Alcohol Studies*, 6(2): 89–103.
- Burke PJ, O'Sullivan J, Vaughan BL 2005. Adolescent substance use: Brief interventions by emergency care providers. *Paediatric Emergency Care*, 21(11): 770–776.
- Campbell CA, Hahn RA, Elder R, Brewer R, Chattopadhyay S, Fielding J, Naimi TS, Toomey T, Lawrence B, Middleton JC 2009. The effectiveness of limiting alcohol outlet density as a means of reducing excessive alcohol consumption and alcohol-related harms. *Am J Prev Med*, 37: 556–569.
- Clausen T, Rossow I, Naidoo N, Kowal P 2009. Diverse alcohol drinking patterns in 20 African countries. *Addiction*, 104: 1147–1154. doi: 10.1111/j.1360.0443.2009.02559.x
- Crawford R 2006. Health as a meaningful social practice. *Health*, 10(4): 401–420.
- Daly J, Kellehear A, Gliksman M 1997. *The Public Health Researcher: A Methodological Approach*. Melbourne, Australia: Oxford University Press.
- De Vos AS (Ed.) 2002. *Research at Grass Roots: For the Social Sciences and Human Service Professions*. Pretoria: Van Schaik.
- Durrheim K 2006. Research design. In: Martin Terre Blanche, Kevin Durrheim and Desmond Painter (Eds.): *Research in Practice*. 2nd Edition. Cape Town: University of Cape Town Press, pp. 33–59.
- Ferreira-Borges C, Dias S, Babor T, Esser MB, Parry CDH 2015. Alcohol and public health in Africa: Can we prevent alcohol-related harm from increasing? *Addiction*, 110(9): 1373–1379.
- Flisher AJ, Parry CDH, Evans J, Muller M, Lombard C 2003. Substance use by adolescents in Cape Town: Prevalence and correlates. *Journal of Adolescent Health*, 32: 58–65.
- Fritz KE, Woelk GB, Bassett MT, McFarland WC, Routh JA, Tobaiwa O et al. 2002. The association between alcohol use, sexual risk behaviour, and HIV infection among men attending beer-halls in Harare, Zimbabwe. *AIDS and Behaviour*, 6(3): 221–228.
- Gumede V 1995. *Alcohol Use and Abuse in South Africa: A Socio-medical Problem*. Pietermaritzburg, South Africa: Reach Out Publishers.
- Haworth A, Simpson R (Eds.) 2004. *Moonshine Markets: Issues in Unrecorded Alcohol Beverage Production and Consumption*. New York: Brunner-Routledge.
- Jayne M, Valentine G, Holloway S 2010. *Alcohol, Drinking, Drunkenness*. Farnham, UK: Ashgate Publishing.
- Jayne M, Valentine G, Holloway SL 2008. Geographies of alcohol, drinking and drunkenness: A review of progress. *Prog Hum Geogr*, 32: 247–263.
- Julie H, Daniels P, Adonis T 2004. Service learning in nursing: Integrating student learning and community-based service experiences through reflective practice. *Health SA Gesondheid*, 10(4): 41–54.
- Lachenmeier DW, Rehm J, Gmel G 2007. Surrogate alcohol: What do we know and where do we go? *Alcoholism: Clinical and Experimental Research*, 31(10): 1613–1624.
- Leslie HH, Ahern J, Pettifor AE, Twine R, Kahn K, Gómez-Olivé FX, Lippman SA 2015. Collective efficacy, alcohol outlet density, and young men's alcohol use in rural South Africa. *Health & Place*, 34: 190–198.
- Livingston M, Chikritzhis T, Room R 2007. Changing the density of alcohol outlets to reduce alcohol-related problems. *Drug Alcohol Rev*, 26: 557–566.
- Luu BN, Nguyen TT, Newman IM 2014. Traditional alcohol production and use in three provinces in Vietnam: An ethnographic exploration of health benefits and risks. *BMC Public Health*, 14: 731.
- Makhubele JC 2012. Hazardous Substances in Homemade Alcohol in Rural Areas of Limpopo Province, Republic of South Africa: A Public Health Concern. *African Journal of Drug & Alcohol Studies*, 11(1):17–27.

- Mnyika KS, Klepp KI, Kvale G, Ole-Kingori N 1997. Determinants of high-risk sexual behaviour and condom use among adults in the Arusha region, Tanzania. *International Journal of STD and AIDS*, 8(3): 176-183.
- Mustonen H 2007. Relationships of drinking behaviour, gender, and age with self-reported alcohol-related problems in Namibia. *African Journal of Drug and Alcohol Studies*, 6(2): 75-88.
- Needle RH, Kroeger K, Belani H, Hegle J 2006. Substance abuse and HIV in Sub-Saharan Africa: Introduction to the special issue. *African Journal of Drug and Alcohol Studies*, 5(2): 88-94.
- Neuman WL 2006. *Social Research Methods: Qualitative and Quantitative Approaches*. Boston: Pearson Allyn and Bacon.
- Notess M 2005. *Using Contextual Design for Digital Library Field Studies ("Studying Digital Library Users in the Wild") - JCDL 2005 Workshop*. USA: Indiana University.
- Nutt DJ, King LA, Phillips LD 2010. Drug harms in the UK: A multi-criteria decision analysis. *Lancet*, 376: 1558-1565.
- Obot IS, Karuri GS, Ibang A 2003. Substance use and other risky behaviours of secondary school students in a Nigerian urban area. *African Journal of Drug and Alcohol Studies*, 2(1 and 2): 57-65.
- Obot IS 2006. Alcohol use and related problems in sub-Saharan Africa. *African Journal of Drug and Alcohol Studies*, 5(1): 17-26.
- Odejide AO 2006. Status of drug use/abuse in Africa: A review. *International Journal of Mental Health and Addiction*, 4(2): 87-102.
- Parry CD, Plüddemann A, Steyn K, Bradshaw D, Norman R, Laubscher R 2005. Alcohol use in South Africa: Findings from the first Demographic and Health Survey 1998. *Journal of Stud Alcohol Drugs*, 66: 91.
- Parry CDH, Bennetts AL 1998. *Alcohol Policy and Public Health in South Africa*. Cape Town: Oxford University Press.
- Parry C, Bennetts A 1999. Country profile on alcohol in South Africa. In: L Riley, M Marshall (Eds.): *Alcohol and Public Health in 8 Developing Countries*. Geneva: WHO, pp. 139-160.
- Parry CDH, Plüddemann A, Steyn K, Bradshaw D, Norman R, Laubscher R 2005. Alcohol use in South Africa: Findings from the first demographic and health survey. *Journal of Studies on Alcohol*, 66: 91-97.
- Pasch KE, Hearst MO, Nelson MC, Forsyth A, Lytle LA 2009. Alcohol outlets and youth alcohol use: Exposure in suburban areas. *Health Place*, 15: 642-646.
- Pasch KE, Komro KA, Perry CL, Hearst MO, Farba-khsh K 2007. Outdoor alcohol advertising near schools: What does it advertise and how is it related to intentions and use of alcohol among young adolescents? *J Stud Alcohol Drugs*, 68: 587-596.
- Pearce J, Barnett R, Moon G 2012. Socio spatial inequalities in health-related behaviours: Pathways linking place and smoking. *Prog Hum Geogr*, 36: 3-24.
- Peltzer K, Seoka P, Babor T, Tlakula J 2004. Training Primary Care Nurses to Conduct Alcohol Screening and Brief Interventions in the Limpopo Province. Presented at the Symposium on Screening and Brief Intervention of Alcohol Problems in South Africa, organised by the HSRC, the Department of Health (Limpopo), and the Health Behaviour Research Unit of the University of the North, Turfloop, University of the North, South Africa, 7 April 2004.
- Penden M, Van Der Spury J, Smith P, Bautz P 2000. Substance abuse and trauma in Cape Town. *South African Medical Journal*, 90(3): 251-255.
- Pitso JMN 2007. Field tales of hazardous home brewed alcoholic beverages: The case of Selebi Phikwe, Popova S, Giesbrecht N, Bekmuradov D, Patra J 2009. Hours and days of sale and density of alcohol outlets: Impacts on alcohol consumption and damage: A systematic review. *Alcohol*, 44: 500-516.
- Rehm J, Baliunas D, Borges GLG, Graham K, Irving H, Kehoe T, Parry CD, Patra J, Popova S, Poznyak V, Roerecke M, Room R, Samokhvalov AV, Taylor B 2010. The relation between different dimensions of alcohol consumption and burden of disease: An overview. *Addiction*, 105: 817-843.
- Rehm J, Kehoe T, Rehm M, Patra J 2009b. *Alcohol Consumption and Related Harm in WHO Africa Region in 2004*. Toronto, Canada: Centre for Addiction and Mental Health.
- Rice P, Ezzy D 1999. *Qualitative Research Methods: A Health Focus*. Melbourne: Oxford University Press.
- Richardson, EA., Hill, SE., Mitchell, R., Pearce, J. and Shortt, NK., 2015. Is local alcohol outlet density related to alcohol-related morbidity and mortality in Scottish cities?. *Health & place*, 33, pp.172-180.
- Roerecke M, Obot IS, Patra J, Rehm J 2008. Volume of alcohol consumption, patterns of drinking and burden of disease in sub-Saharan Africa, 2002. *African Journal of Drug and Alcohol Studies*, 7: 1-15.
- Simbayi LC, Kalichman SC, Jooste S, Mathiti V, Cain D, Cherry C 2004. Alcohol use and sexual risks for HIV infection among men and women receiving sexually transmitted infection clinic services in Cape Town, South Africa. *Journal of Studies on Alcohol*, 65(4): 434-442.
- Weiss RS 1994. *Learning from Strangers: The Art and Method of Qualitative Interview Studies*. New York: The Free Press.
- World Health Report 2002. *Reducing Risks, Promoting Healthy Life*. Geneva: WHO.
- World Health Organization 2010. *Global Strategy to Reduce the Harmful Use of Alcohol*. Geneva: WHO.
- World Health Organization 2014. *Global Status Report on Alcohol and Health*. 2014 Edition. Geneva: WHO.
- World Health Organization 2014a. *Global Status Report on Alcohol and Health 2014*. Geneva: WHO.