

Chapter 5

Pilot Study on Patterns of Consumption of Nonindustrial Alcohol Beverages in Selected Sites, Dar es Salaam, Tanzania

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The United Republic of Tanzania is a developing country in East Africa. It covers an area 945,000 square kilometers and has 1,424 kilometers of marine coastline on the eastern border. It has long land borders with Kenya, Uganda, Rwanda, Burundi, Democratic Republic of Congo, Zambia, Malawi, and Mozambique, and it bestrides a number of inland waters. The wide variation in altitude offers a range of climates, from the humid and hot tropical climates on the coast to the warm savanna grasslands, the warm highlands, the temperate mountains, and the alpine climate on the slopes of the high mountains such as Kilimanjaro. It has a population of 34.6 million people and a population density of 39 per square kilometer (Tanzanian Bureau of Statistics, 2002). The country has about 120 ethnic groups; a common language, Kiswahili, facilitates easy communication between people.

There was a slow but steady increase in life expectancy at birth from 41.7 years in 1962 to a peak of 52 years in 1992, but this trend has been reversed over the past 10 years with a decline to a life expectancy of 48 years by 1998. The AIDS epidemic is one major factor associated with this decline (UNAIDS, 2000).

Sustained per-capita income growth has been evident since 1995, with a steady increase from 0.6% per annum to an estimated 2.5% by 1999 (Bigsten & Danielson, 2001). Despite this overall increase, there are indications that income distribution has worsened over the years, and income has declined in absolute terms in the face of currency devaluation. It is estimated that 50% of the population live in poverty, most of them in rural areas (Mutalemwa, Noni, & Wangwe, 1998).

HISTORICAL PERSPECTIVE ON ALCOHOL AVAILABILITY AND CONSUMPTION

Tanzanians have brewed alcohol beverages from time immemorial. Home-made beers produced commercially by cottage industry have been licensed for over 50 years. The Intoxicating Liquors Act of 1968 provided detailed guidelines for their production and consumption. Licensing laws, however, have had little if any impact on production and consumption of homemade brews.

Cultural Practices

In traditional settings, patterns of production and consumption of alcohol were influenced primarily by cultural practices. Such occasions fell into the rhythm of cycles of cultivation and harvest together with life-cycle events, which exerted subtle controlling influence on drinking outside these ceremonial or social occasions. Pan (1975) emphasized that the accent was on “participation in the ritual rather than intoxication.” In addition, well-established rules determined, for example, the appropriate strengths of alcohol beverages offered to various family members and age groups. The strongest drinks were reserved for the male elders attending the occasion. The strength of the drink was dependent on the period of fermentation prior to serving.

Ethnic and Geographic Areas

The varied climatic conditions, from the almost temperate highlands through the semiarid grasslands to the steaming hot coastline, influence economic activities and seasonal availability and type of alcohol beverages. Different peoples—the WaChagga, WaPare, WaBarbaig, WaIraqwi, WaMeru, WaArusha, and others—have various crops throughout the year that can be converted to alcohol beverages. The southern highland dwellers, for example, have *ulanzi*, which is a homemade wine tapped from a kind of bamboo called *mlanzi* available most of the year. The WaChagga and WaHaya have banana fruit that can be used to prepare beer. The WaPare mostly use sugar cane. Ethnic groups originating from the savanna grasslands depend more on the seasonal availability of grain harvests and the collection of wild honey.

In the past it was possible to discern an established alcohol production and drinking pattern among these ethnic groups, even when they were well established in urban areas. However, in the more recent past improved transport between regions of the country appears to have improved the availability of food crops from different climatic conditions in other regions of the country. The result may have reduced the differences between geographic locations in the production and consumption of alcohol. It is now possible, for example, for banana beer to be brewed throughout all regions of the country from bananas transported from growing areas in the highlands.

Production of Alcohol Beverages

Until the mid-1980s, production of industrially produced alcohol beverages had only managed to keep pace with population growth (Kilonzo, 1989). Between 1973 and 1983, inclusive, the availability (i.e., production plus imports minus exports) of alcohol beverages in Tanzania in terms of absolute alcohol (industrial beverages plus home brews) fluctuated around an average of 3.47 liters per person aged 15 and above (Kilonzo, 1989). Almost all available alcohol in the

country is consumed. This figure places Tanzania among the countries in the medium consumption range, between Mexico, Kenya, and Gambia on the high side and Egypt, Morocco, and Sri Lanka on the low side among developing countries (Kortteinen, 1989). When records were examined in 1987, imported alcohol beverages amounted to less than 1 % of available alcohol (Kilonzo, 1989). More recent records have not been examined; however, anecdotal evidence suggests that with trade liberalization and changing sociopolitical structures, industrially produced alcohol beverages occupy a more important position in certain strata of society today.

PATTERNS OF ALCOHOL CONSUMPTION WITHIN THE COUNTRY

Patterns of alcohol consumption in Tanzania appear to be changing under the influence of rapid urbanization and the breakdown of the traditional social fabric and family system. In urban areas that are ethnic melting pots, the prevailing social influences differ in many respects from the traditional setting. Peer influence is more likely to assume an inordinate importance as compared to the influence of elders or parents. Traditional customs and taboos are also likely to be less compelling in a heterogeneous ethnic confluence (Acuda, 1983). Market forces may also influence the reasons for brewing alcohol beverages and the settings in which they are consumed. Maula (1990) observed that the drastic fall in purchasing power of Tanzanian workers has influenced many people to get involved in the brewing of alcohol beverages as a way of supplementing their incomes.

In addition, the economic and sociopolitical changes noted earlier have had a negative impact on the formal (education) and informal structures for the socialization of young people, as well as on access to employment opportunities. Another noticeable change in pattern has emerged over the past 30 years or so in that alcohol beverages are increasingly taken for recreational use. In settings where there are few recreational facilities, drinking may be the main source of recreation. It has been suggested that these changes are accompanied by an increase in harmful patterns of alcohol use, including the use of alcohol beverages that are not produced industrially (Kilonzo, 1989; Singano, 1984).

A high proportion of Dar es Salaam residents appear to be nondrinkers of alcohol. In a survey of drinking behavior of persons aged 16 years and above in Dar es Salaam, 77.5% of male and 88.8% of female were reported abstainers (Ministry of Health, 1997). The 22.5% of drinking males comprised 6.5% who drank occasionally, 9.8% who drank on weekends, and 6.2% who drank daily. The proportion of females who drank was much less: 5.7% drank occasionally, 3.8% on weekends, and 1.7% daily. The Dar es Salaam region has relatively low drinking rates for Tanzania. The figures up-country are much higher (daily male drinkers were 14.7% in Morongo and 47.3% in Hai). Corresponding figures for females were 9% in Morogoro and 34.6% in Hai.

Among secondary school students in Dar es Salaam, regular use of alcohol varies from 4.8% occasionally (Musoke, 1997) to 6% at least once weekly (Kaaya, Kilonzo, Semboja, & Matowo, 1992; Kazaura et al., 1999). Among secondary school teachers in Dar es Salaam, 43.6% are teetotalers and 47.4% drink alcohol, out of which 15.8% drink at a hazardous level (Hussein, 1999).

Women are likely to be increasingly recruited into drinking as they brew traditional alcohol beverages for commercial purposes (Maula, 1988).

Types of Home-Brewed Alcohol Consumed

Studies have indicated that more than 89% of available alcohol in Tanzania is nonindustrially produced opaque beer (Kilonzo, 1989). The quantities and frequency of consumption of these beers are not well documented and have generally been difficult to study because of a number of problems, including the difficulty of estimating ethanol content and quantities consumed (Acuda, 1990). However, there are indications that a large proportion of the alcohol consumed in Dar es Salaam, especially among low-income earners, is in the form of home-brewed opaque beers.

The types of locally made/home-brewed alcohol beverages include the following:

- *Komoni*, a licit maize opaque beer made from maize husks.
- *Mbege*, a licit home-brewed beer made from banana and finger millet.
- *Mnazi*, a licit home-brewed wine made from palm juice.
- *Dengelua*, a licit home-brewed beer made from sugar cane and honey.
- *Wanzuki*, a licit home-brewed wine made from honey, mead, sugar, and yeast.
- *Gongo* (moonshine), an illicit spirit made from fermented papaw and sugar.
- *Kibuku*, an industrial opaque beer made from maize and sorghum.

Some studies have shown that some of these beers contain unacceptable amounts of aflatoxins, methanol, and other fusel oil (Mosha, Wangabo, & Mhinzi, 1996; Nikander et al., 1991; Wangabo, 1996). Anecdotal accounts continue to suggest that some impurities are deliberately added to the beverages to increase the intoxicating effects of the drinks. It is also generally observed that the drinking pattern in East Africa is that of bingeing (Partanen, 1991). Singano (1984) observed a "twice weekly" pattern of attending beer outlets.

Gongo

In addition to traditional home-brewed opaque beers, a proportion of the drinking population in Dar es Salaam drinks an illicitly distilled alcohol spirit called *gongo*. It is difficult to estimate the amount produced and consumed because of its legal prohibition. This form of alcohol, however, is much more toxic, sometimes containing methyl alcohol in concentrations that lead to blindness or

even death. In gallows-like humor, “*gongo* drinkers” say to each other “*mazishi kesho saa nane*” (burial tomorrow at 2 p.m.), meaning that one of the drinkers might possibly die in a kind of Russian roulette. It is a challenge to estimate the available alcohol in this form and the proportion of the drinking population that consumes it.

During the 1960s efforts were made by the government to purify this illicit beverage by buying it from producers and distilling it industrially into *konyagi*. However, as the cost involved in the process was prohibitive, it was then produced from the direct fermentation of molasses.

RATIONALE FOR PILOT STUDY

A bold initiative set out in the Principles of Cooperation among the Beverage Alcohol Industry, Governments, Scientific Researchers, and the Public Health Community (O’Connor, 1997) involves producers of beverage alcohol, health professionals, and government representatives in a common enterprise of promoting healthy use of alcohol. The involvement of brewers of traditional opaque beers in this process cannot be considered without a better understanding of the consumption of these beverages. Traditional methods of collecting data have not given a very clear picture. The low reliability of self-reported measures in assessing alcohol use has implications for policy and management (Webb, Redman, Sanson-Fisher, & Gibberd, 1990). There is therefore a need to find better methods of studying the consumption of nonindustrial beverages.

METHODOLOGY

A method of keeping household diaries was piloted in July-September 2002 for the purpose of obtaining a clearer picture of frequency, quantities, settings, and social consequences of consumption of traditional home-brewed opaque beers. It was assumed that a prospective diary method with data recorded on a daily basis and monitored by trained research personnel would increase the reliability and validity of measurements of alcohol consumption, thereby minimizing problems encountered in quantity-frequency responses based on what participants remember (Webb et al., 1990) or choose to report.

Objectives of the Study

This pilot study had the objective of evaluating the diary method as an effective tool for obtaining information on the quantity and frequency of consumption of traditional home-brewed opaque alcohol beverages.

Description of Study Sites

The study was carried out at three sites—Gezaulole, Chamazi, and Kimara Baruti—near Dar es Salaam, the commercial capital of Tanzania, which has an estimated population of 3.5 million people. As a result of rapid rural-urban migration, it has grown from a coastal village with a population of 10,000 in 1894 to its present size. The majority of Dar es Salaam residents operate in the informal sector of the economy, earning their living through petty business or subsistence farming on the outskirts of the city.

Gezaulole village is situated 14 km to the southeast of the city. It has an estimated population of 5,000 people and is divided into three hamlets (Mbwa Maji, Mwera, and Kizani). Mbwa Maji is the oldest settlement of Swahili Zed coastal people who follow the Muslim culture. Consumption of alcohol, and of traditional beers, is expected to be low. Most of the inhabitants are peasant farmers, although a few are small-scale fishermen. Mwera hamlet is composed of a mixture of traditional inhabitants of the coastal area and migrants from up-country. Its population subsists entirely on peasant farming. Traditional beers and illicit spirits are produced and consumed. Some of the illicit spirits consumed in the city are thought to originate from this hamlet. Mostly migrants from up-country populate Kizani. The inhabitants subsist on small-scale farming; surplus tomatoes, sweet potatoes, and cassava are sent for marketing to the city center. A small proportion of the inhabitants are employed in the city and commute daily. Traditional beers, illicit spirits, and industrially produced beverage alcohol are consumed.

Chamazi village is situated 18 km southwest of the city, with a population of 6,000 people. Most of the population consists of traditional coastal inhabitants, with a small proportion of immigrants from up-country. Inhabitants subsist chiefly on agriculture, although a portion work in the city center, commuting daily. There are easy transport connections to the city center. Although traditional palm wine is the most popular drink, illicit spirit alcohol is also produced and consumed in the village.

Kimara Baruti is a village on the western side of Dar es Salaam about 14 km from the city center. The population is about 3,000. Most inhabitants are employed wage earners who supplement their income with small-scale mixed farming. They are relatively well-to-do. They could be expected to consume more industrially produced alcohol beverages than traditional beers. Illicit spirit is also available and consumed.

Sampling Method

Selection of the pilot sites was purposive, with the aim of capturing both areas mostly likely to consume traditional beers and communities of varying socioeconomic levels (except for the upper socioeconomic strata). From each village, three “ten-household” leaders were selected by lottery from the list of

“ten-household” leaders kept by the village division or ward leader. All 10 households under the chosen “ten-household” leaders were recruited, making a total of 30 households for each village.

All the households and household members of the 10-cell units that were selected were requested to participate in the study. A total of 90 households (families) in the Dar es Salaam area were selected in that manner. The households averaged 3.2 members, of whom 2.21 were aged 12 years and over. A total of 199 household members aged 12 and over were therefore eligible to participate in the study.

Study Methods and Procedures

Personnel

A clinical psychologist, together with three social workers who trained and supervised 15 medical students as research assistants to conduct the study, assisted the principal investigator. The medical students were at the stage of clinical training and had experience in community fieldwork and research. Three research teams were formed. Each team, consisting of one supervisor and five research assistants, was assigned to one of the three research sites (Gezaulole, Chamazi, and Kimara Baruti villages). An experienced research data entry clerk entered the data.

Method of Data Collection

Each member of the selected households aged 12 years and above was asked to keep a separate systematic daily record of the consumption of alcohol beverages over a specific time period. Diary records were not collected continuously but during specified periods of 4 or 5 days, which included midweek, midmonth, month-end, and weekend periods as well as a public holiday and other celebrations. In total the diaries were recorded at seven different points in time (five periods of 4 days and two periods of 5 days), with the cumulative total time for each household being 30 days (see Appendix 1).

The research assistants interviewed the head of the household about the drinking patterns of each member aged 12 years and above, and visited each household at specific intervals (at least twice during each 4-day period) (see Appendix 1) to review and monitor the diary recording with each household member. The research assistants worked with a maximum of five households at any one time. The drinking vessels were measured by volume. When a common drinking vessel was shared, the amount taken by each individual was estimated.

The research assistants also kept field notes on the diary record of each participant and noted discrepancies between the diary and information provided (during the initial interview) by the heads of household regarding the drinking

behavior of household members. In addition, the research assistants made a daily summary of all their observations, including any obvious problems associated with drinking behavior.

Overall coordination of data collection was done by three trained supervisors. Supervisors performed reliability checks on the information being recorded and dealt with any procedural or research issues as they arose. The principal investigator and coinvestigators met with the research team to review progress and address issues arising. Information was collected on types and quantities of alcohol beverages being consumed and the amount of money used to purchase the beverages per day. Specimens of each type of traditional alcohol beverage were collected for chemical laboratory analysis. Information was also obtained regarding any member of the household who might be involved in brewing traditional beer, and the amount and income obtained from brewing.

Statistical Methods and Data Analysis

The data were precoded. The completed diaries were collected by the research assistants and checked by the research supervisors for reliability. The coded data were then entered into a computer for analysis using Statistical Program for Social Sciences 9.0 version for Microsoft Windows 1998.

Analysis of Alcohol Content

Specimens of some beverages were collected for analysis of alcohol content. From the three areas, one sample of each type of alcohol was collected from each of the three sites selected and analyzed for alcohol content and the possible presence of methanol or fusel oil. In a separate exercise, illicit alcohol distillate (*gongo*) was collected from the same sites of study in a similar way (March 2002). Four samples were taken from each site, covering weekdays and weekends. The results are outlined in [chapter 11](#).

Equipment

A laboratory measuring flask was provided to every research assistant to measure the volume of drinking containers used by participants. Analysis of the alcohol beverages was done at the government chemist's laboratory.

Socioeconomic Analysis

Participants were grouped into three socioeconomic classes according to six weighted questions (see Appendix 2). The aggregate was then divided by three to get three socioeconomic status groups (lower, middle, and upper socioeconomic status). The range in points was 0–7 for the low socioeconomic class, 8–14 for the middle socioeconomic class, and 15–21 for the upper socioeconomic class.

Ethical Considerations

Consent from each head of household and each family member participating was requested and obtained. The research assistant was required to respect the confidentiality of each household member. The purpose of the study was explained to each family member that was involved in the study. After the collection of data was complete, a small token payment was made as compensation for loss of earnings during the period of participation in the study. Permission was sought and obtained from central and local authorities prior to embarking on the study.

RESULTS

The results presented cover the 30 days of data collection in Chamazi, Gezaulole, and Kimara Baruti. In total, 90 households participated in the study. The number of household members ranged from 1 to 8, averaging 3.2. For those aged 12 and above the average number of participants per household was 2.21, yielding a total study sample of 199. All 199 study participants completed a diary. The majority of participants were adults between 16 and 45 years of age. Males (99) and females (100) were equally represented in the study. It is interesting to note that while male-headed households totaled 57 (63.3%), females headed as many as 33 (36.7%). Female-headed households did not reflect female dominance but rather single-female-parent families, widowhood, spinsterhood, divorce, and separation.

Out of the total 90 households selected, 89.5% of the household heads were teetotalers, but not all members of those households were teetotalers. Of the 199 study participants, 117 were nondrinkers and 82 were drinkers. All of the 90 household heads and members age 12 and above (drinkers and non-drinkers) were retained as study participants, as the primary objective was to evaluate the effectiveness of the diary method as an effective tool for gathering information. Retaining the nondrinkers allowed us to observe any change in drinking patterns during the study period (e.g., from nondrinker to drinker or vice versa). The data was used for comparative purposes with the WHO (World Health Organization) Alcohol Use Disorders Identification Test (AUDIT).

The first period of data collection, 29 July-1 August 2000 for Kimara Baruti and Chamazi and 30 July-2 August 2000 for Gezaulole (see Appendix 1), was considered a training period and was not used for analysis. It gave the research team an opportunity to address some of the initial problems encountered. Gender and religious affiliation did not appear to interfere with participants' readiness to complete the diary.

Alcohol Consumption

Seventy-nine (out of 82) identified drinkers specified the type of alcohol consumed during the period of recording. As predicted, the type of beverage consumed reflected the available food crop in the different study locations: *mzazi* (palm wine) at Chamazi and Gezaulole, *wanzuki* (honey mead) only at Chamazi, and *mbege* (banana beer) at all three study sites (Table 5.1).

The alcohol beverage most frequently consumed in the study population was beer, followed by *gongo*, an illicit spirit. When the data are disaggregated according to study site, *gongo* was consumed more in Gezaulole, the most rural of the three communities. Table 5.2 shows that beer and then *gongo* were the most frequently consumed alcohol beverages among both male and female drinkers.

When drinkers took more than one type of alcohol beverage, they would most likely be drinking beer and *gongo*. The results also show that *gongo* is the second most common alcohol beverage consumed by drinkers.

TABLE 5.1. Patterns of Alcohol Consumption at the Three Study Locations

Type of beverage	Chamazi	Gezaulole	Kimara Baruti
	Number T = 18	Number T = 42	Number T = 19
Illicit spirit			
<i>Gongo</i>	9	32	2
Licit traditional home-brew			
<i>Komoni</i> opaque beer	10	4	4
<i>Mbege</i>	4	10	2
<i>Wanzuki</i>	2	0	0
Licit industrial beverages			
<i>Konyagi</i>	3	0	1
<i>Kibuku</i>	8	3	2
<i>Amarula</i>	0	0	1
Beer	11	15	18
Licit palm wine home-brew			
<i>Mnazi</i>	8	14	0

Note. Beer refers to industrial beer. For homemade beers the specific names are used, e.g., *mbege*.

TABLE 5.2. Type of Alcohol Beverage Consumed by Gender

Type of alcohol beverage consumed	Female (34 drinkers)		Male (45 drinkers)		Total (79 drinkers)	
	Number	%	Number	%	Number	%
<i>Komoni</i>	7	20.06	11	24.4	18	22.8
<i>Kibuku</i>	4	11.8	9	20.0	13	16.5
<i>Mbege</i>	7	20.6	9	20.0	16	20.3
<i>Mnazi</i>	8	23.5	14	31.1	22	27.8
<i>Gongo</i>	15	44.1	28	62.1	43	54.4
Beer	21	61.8	23	51.1	44	55.7
<i>Wanzuki</i>	1	2.9	1	2.2	2	2.5
<i>Amarula</i>	1	2.9	0	0.0	1	1.3
<i>Konyagi</i>	1	2.9	3	6.7	4	5.1
Total	65	39.8	98	60.2	163	

Note. Diary records reflect that drinkers consumed more than one type of alcohol beverage.

TABLE 5.3. Alcohol Consumption by Age

Age groups (years)	Drinking status		Total
	No	Yes	
12–20	30 (96.8%)	1 (3.2%)	31 (15.6%)
21–28	28 (70%)	12 (30%)	40 (20.1%)
29–36	24 (53.3%)	21 (46.7%)	45 (22.6%)
37–44	12 (40%)	18 (60%)	30 (15.1%)
45–52	09 (34.6%)	17 (65.4%)	26 (13.1%)
53+	14 (51.9%)	13 (48.1%)	27 (13.6%)
Total	117 (58.8%)	82 (41.2%)	199 (100%)

Alcohol consumption was higher among the older age groups in the study than the younger ages and this was significant ($\chi^2=0.00$). However, there is a fall-off among drinkers in the oldest age group from 65.4% (45–52 age group) to 48.1% (53+ age group) (Table 5.3). This is a common finding in many countries.

Socioeconomic Status of Drinkers

The study results indicated that different levels of socioeconomic status tend to consume different types of alcohol beverage (Table 5.4a). Drinkers from the upper socioeconomic group reported drinking beer and *kibuku*, both industrial alcohol beverages. Those from the middle socioeconomic group preferred to drink *gongo* and beer, whereas those from the lower socioeconomic group preferred *mnazi*.

There was equal representation between people of Muslim and Christian religious orientation in the study areas. Results in Table 5.4b reveal that a greater majority of the Christian population (48.7%) consumed alcohol compared to Muslims (31.0%). Chamazi, the study site with the greatest Islamic influence, was the only site where females consumed fewer units of alcohol than males.

TABLE 5.4a. Consumption of Alcohol Beverages by Socioeconomic Status

Type of beverage	Lower number	Middle number	Upper number	Total number
<i>Komoni</i>	2	16	0	18
<i>Kibuku</i>	1	10	2	13
<i>Mbege</i>	4	11	1	16
<i>Mnazi</i>	8	14	0	22
<i>Gongo</i>	2	40	1	43
<i>Beer</i>	5	37	2	44
<i>Wanzuki</i>	1	1	0	2
<i>Amarula</i>	0	1	0	1
<i>Konyagi</i>	0	3	1	4

Note. Diaries recorded consumption of more than one alcohol beverage.

TABLE 5.4b. Alcohol Consumption by Religious Orientation

Religious orientation	Percentage consuming alcohol		Total
	No	Yes	
Muslims	58	26	84
Christian	59	55	114
Traditional	1	0	1
Total	118	81	199

TABLE 5.5. Frequency of Consumption of Alcohol Beverages on 20 Weekdays

Number of weekdays on which alcohol beverage consumed	Chamazi (51 respondents)		Kimara Baruti (71 respondents)		Gezaulole (77 respondents)	
	Number	%	Number	%	Number	%
	1 to 5	37	72.5	61	85.9	48
6 to 10	4	7.8	8	11.3	11	14.3
11 to 15	5	9.8	2	2.8	8	10.4
16 to 20	5	9.8	0	0.0	10	13.0

TABLE 5.6. Frequency of Consumption of Alcohol Beverages During Weekends (10 Days, All Drinkers)

Number of weekdays on which alcohol beverage consumed	Chamazi (51 respondents)		Kimara Baruti (71 respondents)		Gezaulole (77 respondents)	
	Number	%	Number	%	Number	%
	1 to 3	39	76.5	62	87.3	49
4 to 6	9	17.6	8	11.3	14	18.2
8 to 10	3	5.9	1	1.4	14	18.2

Frequency of Alcohol Consumption

The majority of drinkers at all three study sites consumed alcohol between 0 and 5 times during the week. Gezaulole, the most rural of the study communities, had the highest proportion (23.4%) consuming alcohol beverages between 11 and 20 times during weekdays (Table 5.5).

Diary records showed that 36.4% of Gezaulole drinkers consumed alcohol beverages four times or more over the weekends, compared to 23.5% and 12.7% in Chamazi and Kimara Baruti, respectively (Table 5.6).

Quantities of Alcohol Beverages Consumed

The results summarized in Table 5.7 indicate that with the exception of Chamazi, female drinkers on the average consumed more units of alcohol (28.45) than male drinkers (26.31). However, women spent less money than men to buy their alcohol beverages. The amount of money drinkers reported spending ranged from 0 to 2.400 Tanzanian shillings (US\$0–3) per day.

TABLE 5.7. Mean Total Amount (Units of Alcohol) of Alcohol Beverage Consumed by Study Site and Gender

Study site	Mean units consumed					
	Period 2 (4 days)	Period 3 (4 days)	Period 4 (4 days)	Period 5 (5 days)	Period 6 (5 days)	Period 7 (4 days)
Chamazi (19 respondents)						
Females	13.83	13.66	25.66	40.66	42.16	42.0
Males	26.0	31.46	32.0	42.53	72.61	55.3
All	22.15	25.84	30.0	41.94	63.0	51.1
Kimara Baruti (22 respondents)						
Females	11.5	10.33	8.0	11.91	16.5	10.25
Males	13.2	9.7	7.0	6.9	6.2	4.8
All	12.27	10.04	7.54	9.63	11.81	7.77
Gezaulole (41 respondents)						
Females	34.7	38.58	25.29	45.64	46.88	33.11
Males	28.12	29.7	17.66	35.66	31.6	23.91
All	30.85	33.39	20.82	39.8	37.97	27.73

Proportion of Brewers by Gender

The study showed that 14% of participants were brewers. Males and females were equally represented, and production per day ranged from 16.5 to 22.3 liters. Earning averaged about US\$4 per day.

LIMITATIONS OF THE STUDY

The selection of study sites was purposive and aimed at capturing areas where traditional opaque beers were likely to be produced and consumed. The information generated thus cannot be generalized to the whole Dar es Salaam population.

Main Problems Encountered in Conducting the Study

A number of problems were encountered across sites, particularly during the first period of data collection. The research team needed to address those issues to ensure that the data being collected were reliable. For that reason, the data from the first period were not included in the analysis.

Problems encountered included the following:

Failure to keep scheduled appointments. This was a common experience encountered by all research assistants. Funerals, weddings, or prepresidential

political campaigns involving the whole village often interfered with the research process.

Issues related to confidentiality. It was often difficult (although possible) to interview household members and review the diary privately. Some heads of households tended to be somewhat authoritarian and considered it their duty to safeguard the diaries of household members. In one case, the head of household had locked the diaries in a cupboard and in his absence the household members could neither complete their diaries as directed nor review them with the research assistant. Members of households who were unable to write relied on other family members to make diary entries for them,

Collecting data on illicit alcohol (gongo). Participants were concerned about the legal consequences of completing the diary. Police happened to be making arrests at the time the research was about to commence. Participants expressed fears that the diaries might be used as evidence and that the research assistants were in fact law informers. Political leaders reassured the people and the research continued.

Accuracy. One of the advantages of the diary method is the opportunity to review the record periodically and clarify any discrepancies. However, there was initially some concern about the accuracy of the recording. For example, one head of household (and his wife) had to make an unexpected journey, so he completed his own diary and those of three other household members in advance. Some diaries were incorrectly filled, and the participants were not always available for review. A few participants were reluctant to report on expenditure, in case their spouses saw the record. Other participants were suspicious and curious as to why a stranger should wish to know how much they had drunk and the expenditure they had incurred for alcohol.

Financial remuneration. Some participants indicated a reluctance to continue without some financial remuneration. Explanations regarding the ethics involved in "paying for information" appeared to be acceptable and they continued to participate.

Nonalcohol drinkers. Participants who did not consume alcohol felt it a fruitless exercise to continue to complete the diary after they had informed the research assistants that they were nondrinkers.

Number of visits. Some participants felt that there were too many visits to their homes to review the diaries. They suggested that although the diary method was acceptable, the review visits should be minimized.

During the first period of data collection, each of these issues was addressed and resolved as far as was possible, and the data collection then continued smoothly.

DISCUSSION

This pilot study was aimed at finding out if the diary method could yield reliable information regarding the types and quantities of nonindustrialized alcohol

beverages consumed. A large proportion of Dar es Salaam heads of households appeared to be abstainers (89.5%), while 41.2% of all participants, including household members, consumed alcohol. This most likely reflected the fact that the household members were often young people. The results indicated that younger people were associated with higher levels of consumption of alcohol. They may also have reflected the choice of study sites (semiurban and rural rather than urban populations) on the periphery of the city, where traditional beers and illicit spirits are known to be brewed and consumed.

Types of Alcohol Beverages Consumed

The findings indicated that within the drinking population (41.2% of respondents) the majority concurrently consumed both industrialized and nonindustrialized alcohol beverages. Beer was the most common. Type of alcohol beverage consumed appeared to be associated with socioeconomic status. Drinkers in the upper socioeconomic status group reported drinking beer and *kibuku*, both industrial alcohol beverages. Those from the middle socioeconomic status group drank *gongo* and beer, whereas those from the lower socioeconomic status group drank *mnazi*. This is not surprising when one considers that an equally potent industrially made beer costs about five times more than a homemade beer. There also appears to be a rural-urban difference. In the most rural community, nonindustrial beverages (e.g., *gongo*) were more commonly consumed than industrialized beverages.

If study participants drank more than one type of alcohol beverage, they most likely drank beer and *gongo*. The results also showed that *gongo* was the second commonest alcohol beverage, consumed by both male and female participants in the study.

Frequency of Consumption

The majority of drinkers drank between 0 and 5 times during the week at all three study sites. The frequency of consumption was higher in Gezaulole, the most rural community. Gezaulole had more participants who consumed alcohol beverages between 11 and 20 times during weekdays. Moreover, 36% of its participants consumed alcohol beverages more than 4 times during the weekends, compared to 23.5% and 12.7% in Chamazi and Kimara Baruti, respectively. Higher frequency of consumption appeared to be associated with more rural settings in this study.

With the exception of Chamazi (with its greater Islamic influence), female drinkers on average consumed more units (28.45) of alcohol beverages than males (26.31). However, females spent less money on alcohol than males.

It is also interesting to note that as many as 14.1% of the study participants admitted to being brewers, with virtually equal representation of males and females. The researchers gained the impression that this was an underestimate

when correlated with information given informally by village leaders. Formerly, only older women brewed beer, and all women—including the brewers themselves—consumed only moderately. This may indicate that the brewing tradition has changed and that brewing has become just a business, for both men and women.

The findings indicated that traditional beverages, both licit and illicit, were popular with the majority of participants who consumed alcohol. Their availability and low cost compared to industrial drinks make them more attractive to low-income earners. Some monitoring and control of production, chemical contents, and consumption is essential. Effective strategies to achieve this may need to be considered.

Effectiveness of Diary Method

Previous research on the diary method indicates that its effectiveness in detecting heavy drinkers diminishes as alcohol consumption increases (Webb et al., 1990). This appears to be true for most methods of detecting heavy drinkers. The objective of this study was to evaluate the diary method as an effective tool for obtaining information on quantity and frequency of consumption of traditional home-brewed opaque alcohol beverages. It is not possible at this stage to do more than describe the findings on the quantity and frequency of consumption of traditional home-brewed opaque and other alcohol beverages as recorded by participants. There is no way of verifying the findings of this study. Neither can it be said that the diary method is more reliable and/or valid than other measures. The diary method would need to be administered concurrently with other data collection tools for comparative purposes.

In the current study, interviews with heads of households provided what can be termed collateral information, which may have some value as a countercheck for the diary record. However, the interviews with the household heads seem to have given them the impression that they had to exercise some control over the diaries of household members. Research supervisors and assistants addressed this issue during the first period of data collection and the issue seemed to resolve itself.

Other issues that were addressed during the first period of data collection were issues regarding confidentiality, the need for privacy, the importance of accuracy in recording, and the ethics of reimbursement for research data. Further problems encountered included participants' concern regarding disclosure of information for legal purposes, and complaints of the exercise being tiresome. After these issues were discussed with heads of households and household members there was improved cooperation.

The research team's evaluation indicates that apart from the first period of data collection, during which many problems were sorted out at all levels, the majority of participants found the diary method an acceptable way of recording patterns of alcohol consumption. The fact that the researchers had an opportunity

to systematically review the recorded responses with individual participants meant that the completed diaries were likely to be more accurate than other self-report measures. It was noted that over the course of the month participants were increasingly accurate in recording and fewer discrepancies were found during the actual review of diaries.

From a research perspective this method is intensive and time-consuming, particularly in a culture where timekeeping is not an important cultural trait. In conclusion, the impression from this pilot experience was that it is a method that could be adapted for use in this cultural context, particularly where the data being collected are sensitive and have legal connotations.

APPENDIX 1: Study Time Periods, July–August 2000

The study time periods were as follows

Kimara Baruti and Chamazi

- 29 July–1 August
- 3 August–5 August
- 8 August–11 August
- 13 August–16 August
- 18 August–22 August
- 24 August–28 August
- 30 August–2 September

Gezaulole

- 30 July–2 August
- 4 August–7 August
- 9 August–12 August
- 14 August–17 August
- 19 August–23 August
- 25 August–29 August
- 31 August–3 September

APPENDIX 2: Estimate of Socioeconomic Status of Participants

1. What is your highest level of formal school education?
 - No formal education (Score 0)
 - Some primary (Circle)... Standard 1.2.3.4.5.6 (Score 1)
 - Primary (completed standard 7)...(Score 2)
 - Some secondary (Circle)... Form IV (Score 3)
 - Secondary... Form V... VI (Score 4)
 - Technical school (Score 5)
 - College (Score 6)
2. What is the main roofing material of the house you now live in?

- Grass, thatch (Score 1)
 Palm leaves (Score 2)
 Corrugated tin, cardboard, or plastic (Score 3)
 Tin, tile, tar or with finished ceiling (Score 4)
3. Does your house have any of the following?
- Pit toilet/latrine (Score 1)
 - Flush toilet (Score 1)
 - Tap drinking water (Score 1)
 - Electricity (Score 1)
4. Do you own the dwelling you now live in?
- Yes (Score 2)
 No, rented (Score 1)
 Belongs to relatives/friends (Score 0)
5. What is your occupation? (Please write below)
- No occupation (Score 0)
 Occupation indicated (Score 1)
6. What is your monthly income in Tanzanian shillings per month (——)?
- 0–30,000 (Score 1)
 30,000–80,000 (Score 2)
 80,000–130,000 (Score 3)
 130,000 and above (Score 4)

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