Violence, alcohol and symptoms of depression and in Cape Town's poorest communities: results of a community survey

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Abstract

Introduction
This paper summarises key findings from the first of three representative household surveys conducted in three high-violence areas in the Cape Town, investigating community members' experiences of alcohol use, their built environment, violence and symptoms of depression, together with their views on alcohol and other interventions.

Methods
A stratified random sample of 1500 dwellings, 1200 in Khayelitsha and 300 in Gugulethu and Nyanga ("Gunya") was selected using GIS address data for formal areas and aerial photography for informal areas. Fieldwork took place from July to November 2013. Responses to questions were summarized by area, gender, age and formal vs. informal settlement type.

Results
After substitution and data cleaning, 1213 Khayelitsha households and 286 Gunya households were included. In Gunya, 29% of respondents reported that they or their family members had been affected by at least one violent crime (murder, assault, domestic violence, rape) in the past year, compared with 12% in Khayelitsha. Using a CES-D-10 cut-off of 10, 44% of respondents were classified as depressed. More than half the respondents reported having experienced some form of alcohol nuisance. Respondents were supportive of alcohol interventions such as increased taxes and police regulation of outlets, particularly in Gunya (87%) and amongst female respondents (76%). Satisfaction with infrastructure such as street lighting and drainage was generally low.

Conclusions
The results describe the co-occurring burdens of alcohol and drug use, violence, depression and deprivation in our study populations.

Introduction

South Africa, and the Western Cape province in particular, are significantly impacted by the health burden resulting from high levels of mental health problems [1], heavy alcohol consumption [2,3] and violence [4]. Their suggested interrelatedness and bi-directional relationship for each pair of outcomes perpetuates a cycle of harm that affects health and socio-economic well-being [5]. A study of health disparities in Cape Town shows that the Khayelitsha sub-district suffers a disproportionate burden for a range of health outcomes compared to other health sub-districts [1]including injury from violence [6]. Police data show that precincts in Khayelitsha and two other areas, Nyanga and neighbouring Gugulethu, consistently report among the highest counts and rates of violent crimes (including murder) in the Western Cape and nationally [7]. The Khayelitsha Commission's report in 2014 implicated socio-economic and alcohol-related factors as drivers of high rates of violent crime in the area. Additionally, the challenge of inadequate policing in disadvantaged areas was highlighted by the report[8].

Information on the state of alcohol, mental health and violence in communities typically comes from secondary sources such as the health and criminal justice sectors or from media reports, and what is invariably missing is the community experience. The latter is important, not only to verify or challenge information from other sources, but in its own right to gain a perspective from those who reside in the communities of interest.

A mixed-methods evaluation of interventions addressing these three related problems in Khayelitsha, Gugulethu and Nyanga was initiated in 2013. These interventions

[1] Health disparities for Nyanga and Gugulethu are less evident in this analysis as they are assigned to health districts that include extensive middle class suburbs.

include recent alcohol policy changes and the Violence Prevention through Urban Upgrading (VPUU) programme. VPUU takes a holistic societal approach to address both upstream and downstream determinants of violence. This encompasses restructuring the environment utilising urban planning and design principles and improving access to basic amenities such as water, electricity and social services, in consultation with the affected community [9,10]. The evaluation study uses a range of data, including incidence measures of violent injury collected from emergency room visits, police crime case data, and operational data describing interventions [10]. This evaluation takes place within the Western Cape's policy framework that emphasizes upstream, evidence-based interventions [11] while recognising that measuring the effectiveness of such programmes is difficult [4].

This paper summarises key findings from a 2013 representative household survey, the first of three, addressing community members' perceptions and experience of alcohol, their built environment, violence and symptoms of depression. We describe the methods and sampling of this survey as a foundation for future work and present thematic summary statistics.

Methods

Study population and sampling procedure

The sampling area covered the suburb of Khayelitsha (2011 census population 391 749) and a separate area which spanned the suburbs of Gugulethu and Nyanga (population approximately 100 000). Gugulethu and Nyanga are contiguous and are grouped together as intervention areas by the VPUU programme (see maps in Appendix C) and

referred to collectively as “Gunya” in this paper. Both Khayelitsha and Gunya comprise formal and informal housing and were developed under the segregationist policies of the Apartheid government as settlements for Cape Town’s Black African workforce [12]. Nyanga and Gugulethu are 15km from the city center and were established between 1940 and 1950 [13]. Khayelitsha, a newer suburb, established in 1983, is 30 km from the city centre [14].

A stratified random sample of 1500 dwellings, 1200 in Khayelitsha and 300 in Gunya, was selected for this study using 2012 geographical information systems (GIS) data of all formal dwellings in Cape Town, supplied by the Provincial Government of the Western Cape (PGWC) and originally sourced from the City of Cape Town's address database [15]. In addition, the 2011 version of the Eskom SPOT 5 Building Count (SBC) dataset [16], also supplied by the Provincial Government of the Western Cape (PGWC), was used to map all the informal dwellings in the study area. The samples were designed to be approximately proportional to the sizes of the two communities.

As there are often multiple dwellings on each property, the main household was defined as the residence of the sampled property’s owner. In instances where the owner was not a resident, the household with the most members was considered as the main household. Individuals and other people residing on the property in backyard dwellings or extra rooms were defined as secondary households.

Instruments

Socio-demographic data, including housing type, education level and employment status, were collected by questionnaires administered by trained fieldworkers. Questions about experiences of violence, crime and social nuisance included recent victimisation of the respondent (in the one year period prior to the survey), as well as

perceptions about the association between these outcomes and alcohol and illicit drugs. Psychosocial stress was measured through the 10-item version of the Center for Epidemiological Studies-Depression scale (CESD-10) adapted from the original 20-item version developed as a screening tool for depression in the general population. [17,18]. Each CESD-10 item was measured on a 4-point scale (0 to 3) resulting in a composite score between 0 and 30. CESD-10 cut-offs have been shown to lack specificity [19], we used this cut-off (CESD-10 $\geq$ 10) to indicate the significant presence of symptoms of depression, and to enable comparison with other work in South Africa [20]. Recent unpublished work however [21] has suggested that a higher cut-off of 13 might be more appropriate for our population, so this cut-off is also included. We also considered the CESD-10 composite score as a continuous measure of depression severity [22]. The Cronbach's alpha for the CESD-10 components was 0.76, indicating an acceptable level of reliability for the instrument. We assessed respondents' satisfaction with neighbourhood infrastructure by their rating of neighbourhood characteristics and features such as lighting and sanitation. Questions also addressed knowledge of area-based interventions including urban upgrading, the regulation of alcohol availability and enforcement activities and community involvement. The full questionnaire is available in Appendix A.

Procedures

For consistency, questionnaires were answered by the female head of the main household, i.e. the oldest female household member. Male adult respondents were selected if there were no main household female adult residents or if main household adult females were unable to respond due to psychological or hearing impairment, according to the judgment of the fieldworker and field supervisor.

Fieldwork took place from July to November 2013 in Khayelitsha, and from August to November 2013 in Gunya. Households were substituted from the survey after three unsuccessful visits, or if the property was vacant or if potential respondents refused to be interviewed. Substitutions were made from a second random sample drawn immediately after the initial phase of fieldwork.

Khayelitsha fieldworkers used a paper-based questionnaire and Gunya fieldworkers piloted the use of mobile phone technology using the Open Data Kit (ODK) platform [23].

The survey was granted ethical approval by the Human Research Ethics Committee of the Faculty of Health Sciences, University of Cape Town (HREC 637/2013). All respondents provided written informed consent.

Data Analysis

Responses to questions were summarized by area (Khayelitsha and Gunya) , gender, age and formal vs. informal settlement type. Data were analysed using STATA Version 12 [24]. Additional methodological details including maps of the study areas and substitution are available in Appendix B.

Results

Respondent and household characteristics

In the initial round of interviews, 995/1200 (83%) of potential Khayelitsha respondents agreed to be interviewed, while 184/300 (61%) of potential Gunya respondents agreed. After substitution and data cleaning, 1213 Khayelitsha households (77% of the total sample) and 286 Gunya households were included (23%), approximately proportionate to the size of the population in these neighbourhoods. The number of households sampled in each area differs slightly from the initial targets because substitutions were drawn while fieldwork was ongoing, with Khayelitsha having a lower rate of refusals among the substitute households than Gunya. Additional substitutions in Gunya were not possible in the survey timeframe. Overall 78% of respondent were female. There were proportionately fewer female respondents in Gunya (63%) than in Khayelitsha (79%) and Gunya respondents were on average 3.6 years older than Khayelitsha respondents (mean age 44.7 years, range: [19 – 88] and 41.1 years range: [19 – 90] respectively). Refusals did not appear to be spatially clustered (see map in Appendix C).

Overall, 54% of houses were located in formal areas (72% in Gunya and 52% in Khayelitsha), with Gunya respondents also having a higher proportion of formal electricity (87% compared to 73% in Khayelitsha) and half the proportion of corrugated iron structures (20% compared to 40% in Khayelitsha). Despite this, 51% of respondents in Gunya reported experiencing flooding the previous winter, compared to 36% in Khayelitsha (Table 1).

Table 1 Demographics and Household Information in Gunya and Khayelitsha

	Percent*		
	Gunya**	Khayelitsha	Total
	N= 286	N=1213	N=1499
Mean age of respondents (range)	44.7 (19-88)	41.1 (19-90)	41.5 (19-90)
Median households on site (IQR)	2 (1-4)	1 (1-2)	1 (1.9)
Female main respondent	63	79	78
Dwelling characteristics			
Household head owns dwelling	90	88	89
Dwelling in formal area	62	52	54
Formal electric connection	87	73	75
Dwelling has garden/yard	8	6	6
Experienced flooding in home	51	36	39
Wall Material: bricks	28	13	16
Wall Material: blocks	36	31	32
Wall Material: corrugated iron	20	40	36
Wall Material: wood	15	11	12
Household Economic Activity			
business operating from dwelling	17	12	13
Main earner works in area (Gunya/Khayelitsha)	5	10	9
Main earner works outside area	45	74	68
NA - no main earner	50	17	23
Most frequent transport to work	(N=141)	(N=815)	(N=956)
walk	5	10	9
own car	11	9	9
someone else's car	3	2	2
bus	16	18	17
train	22	25	24
taxi	27	11	13
cycle	1	0	0
multiple methods	15	26	24
Staying in area in next 5 yrs?			
Yes vs No	84	83	84

If no:	(N=46)	(N=160)	(N=206)
to be closer to work	9	3	4
to be closer to family	17	7	9
to formal housing	57	75	71
no choice - eviction	15	1	4
reason - other	2	1	1

*unless otherwise indicated. E.g. 63% of the Gunya main respondents were female
** Gugulethu and Nyanga

Although we could not verify formal ownership of land and title, a high percentage of respondents considered that they owned their houses (89%), and most intended staying in their neighbourhood for the next 5 years (84%). Most of those intending to relocate expected to move to formal housing, but in Gunya a higher percentage expected that they might be evicted (15% vs 1% in Khayelitsha).

The areas differed in income sources, though both were more likely to report a main earner working outside rather than inside the area (45% versus 5% in Gunya and 74% versus 10% in Khayelitsha). Gunya residents were more likely to report a business run from home (17% versus 12% in Khayelitsha). In Gunya half of the households (50%) reported no main earner compared to just 17% in Khayelitsha. Minibus taxis and trains were the two most commonly reported modes of transport to work in Gunya, with trains and ‘multiple methods’ including both taxis and trains were reported most commonly in Khayelitsha.

Violence

In Gunya, 29% of respondents reported that they or their family members had been affected by at least one violent crime (murder, assault, domestic violence, rape) in the past year, compared with 12% in Khayelitsha. In another question, respondents were

asked if *household* members had been involved in violence with family and with strangers in the past 12 months. A higher proportion of Gunya residents (13% and 23% respectively) reported these events compared to Khayelitsha residents (4% and 7%). Of all violent incidents between family members (n=88), 49% were reported to the police and 48% led to a hospital visit. Among violent incidents involving strangers (n=147), 44% were reported to the police and 48% required a hospital visit (Table 2).

Table 2. Experiences of and Views on Violence and Alcohol, by Area*

	Gunya	Khayelitsha	Total
	N=286	N=1179	N=1465
	% unless otherwise indicated**		
Affected by any violence in past year	29	12	15
HH member involved in violence with family	13	4	6
If yes:	N=38	N=50	N=88
...incident involved alcohol or drugs	79	66	72
...police called	42	54	49
...needed to go to hospital	42	52	48
HH member involved in violence with strangers	23	7	10
If yes:	N=66	N=81	N=147
...incident involved alcohol or drugs	76	69	72
...police called	39	48	44
...needed to go to hospital	50	47	48
HH member carries weapon for self-defense	8	5	5
half or more people in area drink too much	72	74	74
half or more people in area drink until drunk	70	72	71
Experienced at least 1 alcohol-related nuisance***	58	56	57
support at least 10 of 15 alcohol interventions mentioned	87	70	74
observed at least 3 of 6 mentioned alcohol interventions	61	19	27
observed at least 5 of 20 mentioned community development interventions	59	12	22

Reported a preference to leave area	14	32	29
CESD-10 score≥13	21	22	22
CESD-10 score≥10	44	44	44
CESD-10 Median (range)	9 (0-26)	7 (0-27)	8 (0-27)

*These are further broken down by age, gender and area type, including sample size for each group, in Table 6 in Appendix D <webref>
**e.g. 15% of the total sample were affected by any violence in past year
***Nuisances asked about were "had someone urinate or vomit on or near your property; felt threatened by drinkers; called police because of alcohol-related disturbance or been concerned by noise from drinkers near you

Symptoms of depression and alcohol use

A median CESD-10 score of 8 was recorded across both communities combined (7 in Khayelitsha, 9 in Gunya), with 44% of respondents having scores of 10 or higher (Table 2). No notable differences in depression scores across age or gender were observed (Table 6 in Appendix D).

In total 72% of violent events involving both family members and strangers were reported to involve alcohol and/or drug use (Table 2). Most respondents (74%) were of the opinion that at least half of community members drank too much alcohol and 71% indicated that drinkers drank until they were drunk. More than half the respondents in both communities reported having experienced some form of alcohol nuisance. Higher rates of alcohol nuisance and drinking were reported in informal areas (66%) compared with formal areas (49%) (Table 6 in Appendix D).

Most respondents in Gunya were aware of alcohol interventions, compared to just one in five respondents in Khayelitsha. Respondents were supportive of alcohol interventions such as increased taxes and police regulation of outlets, particularly in Gunya (87%) and amongst female respondents (76%).

Satisfaction with Neighbourhood and Infrastructure

Satisfaction with infrastructure such as street lighting and drainage was generally low, though more than half of respondents in both areas reported satisfaction with electricity and refuse removal (Table 1 in Appendix D). In Khayelitsha, just 44% of residents of informal areas were satisfied with the condition of toilets (65% in Gunya) and 67% were satisfied with water taps (71% in Gunya). Residents of informal areas were far more likely to report a preference to leave their area (45% versus 15% in formal areas), as were residents of Khayelitsha (32% versus 14% in Gunya), despite being less afflicted by violence and seeming to have more secure tenure.

Additional detail on the experience of violence, including the types of violence experienced, alcohol and drug-relatedness and nuisance; perceptions of alcohol policy and interventions; symptoms of depression and community satisfaction are available in Appendix D .

Discussion

The survey was broadly consistent with the 2011 Census in identifying the level of formal housing in the two communities (67%, 52% and 45% for Nyanga, Gugulethu and Khayelitsha respectively).

Most residents who intend to leave their areas in the next five years were hoping to move to formal housing, so, as expected, these residents were far more likely to live in informal areas. Khayelitsha residents were also more likely to report a preference to

leave their area, perhaps reflecting Khayelitsha's greater distance from potential places of employment.

Violence

The high levels of exposure to violence, e.g. 29% in Gunya and 12% in Khayalitsha indicating they were affected by violence in the past year, are consistent with crime statistics, which rank the police precincts serving these communities as having the highest recorded number of murders in 2014. The Nyanga precinct was ranked first in South Africa with 305 murders, and Gugulethu and Khayelitsha ranked fourth and seventh with 165 and 146 respectively [7].

The low percentage of violent events reported to police (49% for incident with family/friends and 44% for incident with strangers) across both communities is not uncommon in high violence settings [25]. This may reflect a mistrust of formal criminal justice and the perception that reporting has a slim chance of leading to successful prosecution and conviction. This was consistent with the findings of the recent Khayelitsha Commission's report which found that only 60% of crimes were reported. Perceptions of police corruption, failure of the police to adequately respond to calls for assistance or properly investigate crimes, and fear of victimisation by perpetrators were cited as reasons for the underreporting [8].

In our study, this lack of confidence in the police was most evident in informal areas, which may reflect the more limited police presence here as highlighted by the Khayelitsha Commission, but could also point to heightened feelings of social exclusion and disenfranchisement in this multiply-deprived segment of the community

[26]. One positive aspect was that a higher percentage of incidents requiring medical attention or involving alcohol and drugs were reported to the police. This suggests that police data may provide greater coverage of more severe incidents.

Exposure to alcohol and drug nuisance

High levels of alcohol misuse in Khayelitsha have been observed previously in a household survey in the study communities [3] and among patients presenting for violence-related trauma [27]. Our study confirms the prominence of alcohol use in association with violence, particularly in the domestic setting in Gunya, and suggests that this association is well-recognised by residents, who also noted social disturbances and nuisance caused by drinkers. Interventions to reduce hours of sale have been shown to reduce alcohol-related violence in several low-income settings both internationally and in the Western Cape [28,29]. The wide-spread support for interventions to reduce alcohol consumption and harm, particularly among women and in Gunya, is consistent with the findings of recent urban-based research in South Africa's Gauteng Province[30]. In the past, interventions such as increasing tax have sometimes been questioned by Treasury as being regressive [31] so it is interesting to see support for increasing alcohol taxes from respondents living in low-income areas. However, the community perspective presented in this paper is seldom obtained as researchers have tended to focus on the contribution of alcohol to the livelihoods of liquor sellers [32].

Symptoms of depression

While different CESD-10 depression score cut-offs have been shown to optimally predict depressive symptoms in different contexts, ranging from 4 [33] to 10 [34] to 12 [35], even by the high cut-off of 13 (CESD-10 $\geq$ 13), 21% of Gunya and 22% of

Khayelitsha respondents were classified as having significant levels of depressive symptoms, with a cut-off of 10 indicating significant depressive symptoms among 44% in both areas. In comparison with results from other studies conducted using the same instrument in South Africa, it is clear that this sample has particularly high levels of depressive symptomology. For example, Tomita et al. [36], in their analysis of the second wave (2010/11) of the National Income Dynamics Study (NIDS), a large South African nationally representative sample, found when using a cut-off of 10 that 21.1% of the population had significant levels of depressive symptomology. Thus by most measures the sample has high levels of depression, as is to be expected in populations characterised by high levels of deprivation, alcohol use and violence, among other common established risk factors for depression [1,5].

The absence of notable gender or age differences for depressive symptomology was unexpected. Female gender and higher age are consistent risk factors for depression in other studies [37,38]. It is possible that these comparisons were confounded by the greater prevalence of risk factors for depression among males and younger people, such as alcohol or drug use.

Limitations

Population estimates may be imprecise due to rapid urbanization and mobility and the informal dwelling configurations of parts of the areas [39]. The lower percentage of electrified households reported in our study relative to the Census may reflect the Census' inclusion of informal electricity sources for 'electric lighting', whereas we record formal supply.

The respondents may not represent the opinions of all residents of the selected communities. Most questions applied to an entire household and reflected the head of household's knowledge. All self-reported data implies threats to validity, such as underreporting of sensitive incidents/categories of violence (such as domestic violence) and responses that are socially desirable. High levels of support for various interventions listed may in part reflect this bias. Differences arising from the electronic and paper-based data collection methods in the two communities are unclear, but assumed to be minor because fieldworkers received similar levels of training and support. Non-response bias cannot be ruled out, although there were no clear patterns in the distribution of refusals.

In this paper , formal and informal housing were defined according to municipal demarcations – i.e. formal and informal areas, which do not necessarily reflect the formality of sampled dwellings. This will be addressed in future analyses in which we undertake more complex multivariate analyses of each outcome and consider the possible effect of confounding, mediating variables and effect modifiers. We will consider additional variables and relationships such as the effect of formality at an area as well as at a household level.

Finally, aside from alcohol, the survey only briefly dealt with participants' perceptions of drug abuse and its association with crime, without going into more details about specific types of drugs. As certain substances are more linked with crime, more detailed questions should be considered for future research [2].

Conclusion

The interrelated burdens of alcohol and drug use, violence, depression and deprivation in our study populations [5] highlights the need to go beyond policing strategies to address risk factors and to mitigate consequences of violence. There is a clear association between violence and alcohol and the Khayelitsha Commission has recommended the development of a policy to regulate liquor outlets. The general support for alcohol policy interventions [8,11,40] provides encouragement that such interventions are likely to be accepted more readily and receive the necessary community buy-in to improve the likelihood of their successful implementation. Our survey draws additional support, particularly from respondents in Gunya who noted that "shebeens"/unlicensed outlets were associated with a higher level of violence than licensed outlets. However, the effectiveness and cost-effectiveness of localised interventions versus more upstream responses that address alcohol demand (e.g. advertising and promotion) and supply (e.g. pricing and licensing) has yet to be determined in the local context. In addition, interventions to reduce violence should take the wider context of socio-economic deprivation into account and recognise the burden of mental health, both as a driver and consequence of violence. Addressing the current deficit in mental health services and substance abuse prevention and treatment programmes should be a priority [5].

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