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How Visible is the Sex Work in Iran?

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Abstract

Background: Network Scale-Up (NSU) is a promising tool in the size estimation of stigmatized behaviors. In NSU, participants from the general population describe the frequency of stigmatized behaviors in their network. To avoid underestimation, due to the invisibility of sensitive behaviors, NSU results should be adjusted by the Visibility Factor (VF). This manuscript aims to compare three VF calculation methods in sex work settings: Game of Contact (GC), Social Respect (SR), and Expert Opinion (EO).

Methods: In the GC method, we selected 20 names and asked 60 FSWs (Female Sex workers) (known as egos) the total number of their acquaintances (known as alters) with any of the 20 names, and of those, how many were aware that the ego was an FSW. In the SR method, we asked 600 participants from the general population about the number of FSWs they knew, and to rank their respect for FSWs on a scale of 1 to 5. Finally, we asked 14 experts in the field of HIV and health policy about the visibility rate of sex work in Iran.

Results: Based on EO, VF was as low as 38%. VF in GC was 67% (95% CI: 54%, 80%) for both male and female alters. SR suggested a VF of 77% (58%, 101%), which was higher in male than female respondents (83% vs. 62%).

Conclusion: Different methods provide different VF estimates. For a fair comparison of studies, a concrete and standard method for VF calculation should be applied.

Keywords: Female Sex Worker, Network Scale Up, Visibility, Iran

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Introduction

Hard-to-reach groups refer to populations whose behavior is considered against the law, religious values, or social norms. For Islamic cultures, typical examples include drug injection, sex work, or intentional abortion. Severe estimation of hard-to-reach groups is important for policymakers. This information is used for advocacy, planning, and strategic interventions (1).

Different size estimation methods are developed; each of them has its strengths and weaknesses. Generally, size estimation methods can be classified into two broad categories: direct and indirect (2).

The direct method refers to techniques in which participants are asked to provide their personal information, using direct questions. For example, "Have you had an out-of-marriage sex, for money or any other services in the last year?". In the case of stigmatized behaviors, in particular in countries where such behaviors are considered against social norms, direct methods are prone to underestimation of the true size. Although the use of a self-reported questionnaire increases the response rate and trust, respondents may not be willing to reveal their sensitive characteristics (3).

Indirect methods refer to methodologies in which participants reveal their information indirectly or provide in-

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↑What is "already known" in this topic:
In Iran and Ukraine in 2014 and 2009, and China in 2015, the visibility coefficient was obtained by the contact game method and social method, respectively.

→What this article adds:
This study obtained the visibility factor for Female Sex Workers in different methods in Iran so that they can be compared with valid methods and used to estimate their size.

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formation on behalf of their network. An example of the former is the cross-wise method in which a pair of statements is given to the respondent. One of the statements is insensitive with a known prevalence, and the other is sensitive with unknown prevalence. For example, "the first figure of my ID card is 1", and "In the last year, I had an out-of-marriage sex for money or any other services". Respondents are asked to select option A if their reply to both statements is the same, and option B otherwise. Selection of option A means that replies to both questions are similar (either yes or no). The selection of option B means one of the statements was true and the other was false, but it is not clear which one was true (2, 4).

An example of the latter is the NSU method, in which respondents count the number of those they know who engage in the behavior of interest. For example, "how many people you know who sold sex for money or other services in the last year?" (5).

Among size estimation methods, (NSU has practical appeal, as it requires a much lower sample size than other methods. This is because, in NSU, each respondent replies on behalf of his/ her network (5, 6). Our literature review showed that the average social network size in different countries varies from 175 in Ukraine to 364 in Japan (7).

A limitation of the NSU method is the visibility of stigmatized behaviors. That is, a sex worker might not reveal her behavior to all members of her network. In other words, respondents are not necessarily aware of the sensitive characteristics of their acquaintances. Therefore, NSU estimates are crude and need adjustment to take the issue of visibility into account (8).

Our systematic review showed that the main methods applied to measure visibility are Game of Contact (GC), Social Respect (SR), and Expert Opinion (EO). The GC method measures VF from members of a hard-to-reach group prospect. On the other hand, the SR method measures VF from members of the general population prospect. While measurement of Visibility Factor (VF) is a prime in size estimation studies, no study has compared whether different methods provide similar correction factors (9). Our manuscript aims to measure and compare the visibility of sex sell in an Iranian population.

Methods

This study was conducted in Shiraz, the center of Fars province, which is one of the largest and most populous provinces in Iran. We measured the visibility of sex sell using three different methods: Game of Contact (GC), Social Respect (SR), and experts' opinion. A game of contact was conducted among members of the target group (i.e., FSWs).

Game of Contact (GC) method

This part of the study was conducted among 60 FSWs who were selected from a DIC (Drop-in-Center). We prepared a list of twenty names (10 female and 10 male names). We selected names based on the following criteria: prevalence of 0.1% to 4% in the general population, not being two-part, not used for both genders, and not belonging to a particular ethnicity or religion. We asked FSWs (known as egos) the total number of their acquaintances (known as alters) with any of the 20 names, and of those, how many were aware that the ego was FSW (8, 10).

VF was defined as the proportion of FSW alters that were aware of the behavior of egos. Using formula 1, the VF was defined as the total number of aware alters (a_j) divided by the total number of alters (t_j) (where j stands for the names (from 1 to 20) (8, 10):

Formula 1:

$$VF_j = \frac{\sum_j a_j}{\sum_j t_j}$$

Social Respect (SR) method

This part of the study was conducted in the general population, and data were collected through street-based sampling, as this method tended to provide more reliable results (11). At the first step, based on Socio-Economic Status (SES), Shiraz city was divided into four strata. In each SES stratum, three to five main locations (such as parks, streets, and shopping centers) were selected. Participants were selected from pedestrians who verbally consented to take part in this study. We asked participants to reveal the number of FWSs they know (shown by m_i), followed by a Likert scale question on the level of social respect attributed to FSWs (ranged from 1 to 5, i.e., 1 for very low, 5 for very high, with three as medium). Using m_i, the crude size of FSW population was calculated using formula 2 (12, 13). In this Formula i and j stand for the respondent and hidden group, respectively, t is the size of the general population, $\sum_i c_i$ is the total network size of respondents, and $\sum_i m_{ij}$ is the total number of FSWs known by respondents.

Formula 2:

$$e_c = \frac{\sum_i m_{ij}}{\sum_i c_i} * t$$

Then we weighted m_i Values by creating a weight variable w_i using formula 3 (9, 12, 13). Here, m_i and m_3 shows average number of acquaintances depending on the level of respect. For example, m_3 is equal to the average number of people who are recognized as FSWs with moderate social acceptance in society by the respondents. These weights were applied, and an adjusted size of FSWs was calculated. The ratio of crude to adjusted estimate was considered as a surrogate for VF (12-14).

Formula 3:

$$W_i = \frac{m_i}{m_3}$$

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Expert opinion method

We emailed 14 experts in fields such as HIV, health policy, health system management, and researchers who were directly exposed to sex workers. We precisely defined the definition of visibility and asked the experts about the minimum and maximum visibility of sex sell. For each expert, the average of his/ her minimum and maximum guesses was used as the final estimate.

Results

Game of Contact Study

The mean (SD) age of the FSWs was 37.65 (9.94) years, of which 16.7% were temporary marriage, 3.3% were single, 21.7% were married, and 58.3% were widowed or divorced (Table 1). Temporary marriage refers to a short-term marriage contract between a man and a woman and is in line with Islamic values.

In total, 60 FSWs had 1,575 alters with one of the selected first names, giving an average number of alters with one of the selected names of 26.25 persons. The total number of alters aware of the risky behaviors of egos was 1,057; the estimated VF was 67% (95% UI: 54%, 80%), (Table 2), suggesting that, on average, 67% of the people in the network of an FSW were aware that the ego was an FSW. VF for male and female alters was the same. Stratifying the analysis by name, VF values varied from 53% to 76% (Figure 1).

Social Respect Study

In the general population survey, 600 subjects participated in the study with a mean (SD) of 38.29 (13.81). 52.7% were male, 53.8% had a university degree, and 1.0% were unemployed.

53.5% of respondents reported knowing at least one FSW. The crude size of FSWs was calculated at 24,582 (Table 3). Applying these weights, the adjusted size was estimated at 31,813 (Table 3). Dividing these two estimates, VF was calculated at 77%. Stratifying the analysis by gender of participants, a 20-percentage point difference was seen, where males had higher social respect for FSWs than females. VF for male and female respondents was 82% and 62% respectively (Table 2).

Stratifying by social respect, we have seen that the higher the level of respect, the more FSW are known. Respondents with very low and low levels of respect reported knowing 1.24 and 1.74 FSW women, respectively. Corresponding figures in high and very high respect categories were 5.10 and 5.73, respectively (Table 4). Weights applied at each respect category were 0.55 to very low, 0.76 to low, 1 to medium, 2.24 to high, and 2.52 to very high respect categories.

Expert opinion

The high fluctuation was seen in the guesses made by experts. Using the mean of replies, VF was estimated at

Table 1. Demographic information of FSW participants

Demographic characteristic		Frequency (%)
Marital Status	Temporary marriage	10 (16.7)
	Single	2 (3.3)
	Married	13 (21.7)
	Divorced/Widowed	35 (58.3)
Education	under diploma	41 (68.3)
	Diploma	10 (16.7)
	University/Bachelor's and upper	9 (15)

Table 2. Estimation of the visibility factor for FSW by different methods

Game of contact			Social respect		
total VF (95% UI)	VF for female alter (95% UI)	VF for male alter (95% UI)	total VF (95% UI)	VF for male (95% UI)	VF for female (95% UI)
0.67 (0.54,0.80)	0.67 (0.55,0.78)	0.67 (0.51,0.82)	0.77 (0.58,1.01)	0.83 (0.47,1.16)	0.62 (0.40,0.97)

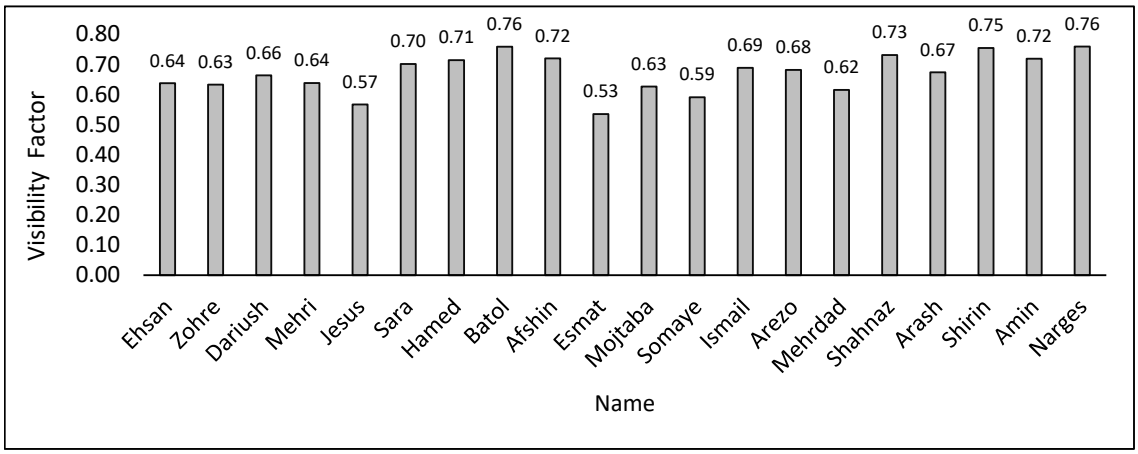

Figure 1. Estimation of Visibility Factor based on all 20 names

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Table 3. Total number of FSW among women aged 15-64 using three different methods, in Shiraz

Point estimate			
crude	Adjusted using the method		
	Game of contact	Social Respect	Expert opinion
24,582	30,137	31,813	53,136

Table 4. The average estimated number of acquaintances in each level and the weight coefficient in each level

Level of respect	FSWs		
	Sample size	The average number of acquaintances	Weight coefficient in each level
Very low	129	1.24	0.55
Low	100	1.74	0.78
Medium	157	2.27	1
High	116	5.1	2.23
Very high	66	5.73	2.52
Total	568	3.22	1.42

0.38 (Table 2).

Discussion

Our study aimed to demonstrate differences between methods frequently applied to estimate the visibility factor. We applied three methods in the sex sell setting in Iran. Social respect led to the highest VF at 77%, followed by GC (67%) and expert opinion (38%). This corresponds to correction factors of 1.30, 1.49, and 2.63. In other words, crude NSU estimates would be increased by 50% if researchers apply the GC correction factor, but by 163% in the case of the application of the experts' opinion correction factor. This shows that the comparison of size estimation studies that applied no or alternative correction factors is not valid.

As sex sell is a stigmatized behavior in most cultures, especially in Iran, the indirect NSU method is frequently applied to estimate the size of this population (15). Our results showed how adjusted estimates would vary by applying different correction factors.

The GC method suggested no difference between VF for men and women. However, in the SR method, about a 20 percentage point difference was seen between males and females (82% versus 62%). This means that sex workers believe that their visibility among males and females is the same. However, the SR method suggested that males are more likely to know/ reveal sex workers than females.

We did not find any study that compared different methods to estimate the correction factor. Other studies only applied one method to estimate the correction factor. In 2013, in Chongqing province in China, a study was conducted using the social respect method among 229 members of the general population who admitted to knowing FSW (Table 5). Interestingly, the crude size was higher than the adjusted size (326 versus 272). Dividing crude by adjusted NSU estimates, VF was calculated at 119% (12). One possible explanation is that VF was calculated on a restricted sample of respondents who knew at least one FSW. When we restricted our data to those who knew FSWs, our estimate changed from 77% to 110%. We believe that those who do not know members of the hard-to-reach group should not be excluded from the VF calculation.

In 2014, a study was carried out in Shiraz on 76 FSWs using the GC method, and the VF was estimated at 45% which was about twenty percentage points lower than our current estimate (Table 5). Sampling variations and changes in the attitude of people towards sex work might be some possible explanations to justify the differences. Another contributor may be high economic pressure due to international sanctions. That is, to make more clients, FSWs had to be more visible to other people (8).

In 2009, in Ukraine, the Game of Contact was applied by interviewing 21 FSWs. Visibility was calculated at 24%. The small sample size in the Ukraine study makes its comparison with other studies difficult (Table 5) (14).

One of the limitations of our study is that it has been conducted only in Shiraz; therefore, our estimate cannot be generalized to other provinces. To get a correction factor for national studies, similar studies should be designed and implemented in provinces with different cultural and economic situations. However, we aimed to emphasize the importance of developing a concrete guideline for the estimation of the visibility factor. This allows fair comparison between studies within and between countries.

Conclusion

We have failed to consider the visibility factor, which leads to an underestimation of the size of female sex workers. However, different methods provide different visibility factors. We cannot suggest any of the methods as the best in all circumstances and suggest that the authors provide adjusted size estimates for different values of the visibility factor, if possible.

Authors' Contributions

Study concept and design: A. R., M R.B, M R.H, and H.

Table 5. Estimation of the visibility factor for FSW by different methods in another country

Country, Year	Method	VF
Iran, 2014	Game of contacts	0.45
China, 2013	Social respect	1.11
Ukraine, 2009	Game of contacts	0.34

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Ethical Considerations

This study was supported by the Institute for Futures Studies in Health (Kerman University of Medical Sciences), with approved Ethical code: IR.KMU.REC.1397.003.

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Conflict of Interests

The authors declare that they have no competing interests.

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