



# Estimating abortion prevalence and understanding perspectives of community leaders and providers: Results from a mixed-method study in Istanbul, Turkey

Women's Health  
Volume 16: 1–13  
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DOI: 10.1177/1745506520953353  
journals.sagepub.com/home/whe  


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## Abstract

**Objectives:** Abortions are difficult to measure; yet, accurate estimates are critical in developing health programs. We implemented and tested the validity of a list experiment of lifetime abortion prevalence in Istanbul, Turkey. We complemented our findings by understanding community perspectives using in-depth interviews with key informants.

**Methods:** We conducted a household survey between March and June 2018. In a random sample of 4040 married women aged 16–44 years, we implemented a double list experiment. We averaged difference in mean values calculations between the average counts for each list to provide an estimated lifetime abortion prevalence. We conducted in-depth interviews with 16 key informants to provide insights into possible explanations for the quantitative results.

**Results:** The abortion prevalence estimate from the list experiment was close to that of the direct question (3.25% vs 2.97%). Key informant narratives suggest that differing definitions of abortion, inaccessibility, provider bias, lack of knowledge of abortion laws and safety, and religious norms could contribute to under-reporting. Results from the qualitative study suggest that abortion is largely inaccessible and highly stigmatized.

**Conclusion:** Measuring experiences of abortion is critical to understanding women's needs and informing harm-reduction strategies; however, in highly stigmatized settings, researchers may face unique challenges in obtaining accurate reports.

## Keywords

abortion, list experiment, sexual behavior, social stigma, Turkey

Date received: 5 May 2020; revised: 29 June 2020; accepted: 7 August 2020

## Background

Globally, induced abortion is a common phenomenon. In low- and middle-income countries, approximately one in four pregnancies ends in induced abortion.<sup>1</sup> Despite that many women choose to end their pregnancies, stigma and socio-cultural norms surrounding the morality of abortion may prevent some women from openly disclosing their experiences. Consequently, even in settings where abortion is legal, under-reporting occurs.<sup>2</sup> Reliable estimates of induced abortion are essential for monitoring reproductive health trends and program development. Furthermore,

underestimates of induced abortion have important consequences for research, monitoring, and evaluation. For example, incomplete data on induced abortion could lead to the underestimation of pregnancy, including unintended

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pregnancy, and could lead to biases in analyses concerned with assessing factors that influence unintended pregnancy and relationships between reproductive health outcomes. Thus, applying innovative methods to measure stigmatized behaviors and understanding the context that creates stigma are necessary.

Although data on why women under-report abortion are limited, abortion stigma—or the negative attributes assigned to women who seek or have had abortions that internally or externally categorize them “as inferior to ideals of womanhood”<sup>3</sup>—may be an underlying cause.<sup>4,5</sup> Abortion stigma is socially constructed at multiple levels, such as through popular discourse, government policies and programs, medical and community institutions, and through personal interactions.<sup>3</sup> However, women cannot be subjected to abortion stigma until their abortion behaviors are disclosed, and many feel an expectation to remain silent about having had an abortion.<sup>6</sup> This silence often perpetuates abortion stigma,<sup>7</sup> and ultimately hesitation to disclose abortion experiences openly.<sup>5,8</sup> Understanding the interpersonal, community, and societal-level factors that create an environment of abortion stigma could improve the methods by which researchers measure abortion prevalence.

Since induced abortion is notoriously difficult to measure,<sup>9,10</sup> researchers have developed and applied novel methods to reduce under-reporting through maintaining respondent confidentiality. The item-count technique, also known as the list experiment, has recently been utilized to measure abortion self-induction in the United States,<sup>11,12</sup> abortion incidence and prevalence in Liberia<sup>13,14</sup> and India,<sup>15</sup> and sex-selective abortion in Vietnam.<sup>16</sup> The list experiment works to reduce the pressure to under-report sensitive behaviors by maintaining participant privacy. Rather than a respondent directly answering whether or not she has had an abortion, she instead reports the total number of items she has experienced from a pre-specified list of items, including an item on abortion. This approach reduces social desirability by ensuring that the interviewer does not know whether a respondent has had an abortion.<sup>17</sup> However, despite initial promise of the method, list experiment studies measuring abortion behaviors have produced mixed results,<sup>16,18</sup> and only two studies have compared list experiment estimates with estimates from direct questioning to know if the method reduced under-reporting.<sup>15,19</sup> The list experiment is a promising tool to measure abortion, but applications in a range of more settings are needed to understand how the method works depending upon the context.

Abortion is a complicated issue in Turkey. Although legal without restriction as to reason up to 10 weeks of gestation, rates of induced abortion are particularly difficult to estimate due to healthcare providers and/or women's unwillingness to report abortion. Until the 1980s, Turkey had criminalized abortion and, for a period,

contraceptive methods to avoid pregnancy. Yet, during this time, induced abortion occurred on a large scale. In the 1960s, in response to advocacy efforts and pressure to reduce high rates of maternal mortality, Turkey established a national family planning policy that promoted the use of both traditional and modern contraceptive methods and expanded access to modern methods through health clinics. At this time, conditions under which abortion was permissible were expanded; although, violations of the law continued to result in legal penalties. Again, under pressure from advocates and researchers, in 1983, Turkey proceeded to legalize induced abortion on request up to 10 weeks of gestation and further expanded women's access to a range of reproductive health services. After this time, the number of self-reported induced abortions fell, presumably as more women adopted contraceptive methods: the percentage of ever-married women reporting that they ever had an abortion decreased from 27% in 1998 to 15% in 2018.<sup>20</sup> However, these estimates rely on direct questioning and likely under-report the true prevalence of lifetime abortion.

Today, induced abortion services in Turkey can be difficult for women to access.<sup>21</sup> Legal restrictions, such as spousal consent laws, restrictions of medical abortion drugs, and opposition by Turkish political leaders, have made obtaining an abortion increasingly difficult in the past 10–15 years. Furthermore, public hospitals rarely provide a full range of abortion services and often only provide services if medically necessary,<sup>22</sup> despite that the majority of women reporting an abortion in the last 5 years obtained an abortion from a public sector facility (51%).<sup>20</sup> Many women also report using private doctor's offices or private hospitals or clinics (49%).<sup>20</sup> However, medical abortion methods can only be administered at hospitals and only by medical providers, limiting women's access to a range of safe abortion methods and trained providers.

While lifetime prevalence of abortion has declined and use of modern contraceptive methods has increased—which help reduce the risk of unintended pregnancy and unsafe abortion—in the last two to three decades in Turkey, many women continue to rely on traditional methods and methods with high failure rates. Among married women, 49% use modern methods and 21% use traditional methods.<sup>20</sup> The most commonly used methods are withdrawal (20%) and male condoms (19%).<sup>20</sup> Across Western Asia, almost half of all induced abortions were unsafe (48.5%, 95% uncertainty interval (UI): 33.7, 59.1) between 2010 and 2014,<sup>23</sup> and 16% of maternal deaths were due to unsafe abortion in 2008.<sup>24</sup> While estimates of unsafe abortion and maternal death due to unsafe abortion in Turkey are outdated, a study using data from a research hospital in Ankara found that about 14% of maternal deaths between 1982 and 2001 were due to unsafe abortion.<sup>25</sup> Furthermore, maternal deaths have substantially declined in Turkey since abortion was legalized: from 130 maternal deaths per

100,000 live births in 1981 to 17 maternal deaths per 100,000 live births in 2017.<sup>26</sup>

In Turkey, older, ever-married women are more likely to report having had an abortion (27% women aged 45–49 years vs 3% among women aged 15–19 years).<sup>20</sup> Relatedly, ever-married women with more children are also more likely to report having had an abortion (7% among women with no living children vs 19% among women with five or more living children).<sup>20</sup> Proportions of lifetime history of abortion are larger among ever-married women with no education or who completed primary education (17% and 18%, respectively) than women who completed secondary or high school or higher (10% and 13%, respectively).<sup>20</sup> However, wealthier women are more likely to report having had an abortion (17% among women in the highest wealth quintile vs 13% among women in the lowest wealth quintile).<sup>20</sup> Lifetime abortion prevalence estimates are the highest in the region of Istanbul (18%) and the lowest in East Black Sea (10%).<sup>20</sup>

Given the socio-political context of abortion in Turkey, the objectives of this study were (1) to estimate induced abortion prevalence using the list experiment method, because of its potential to reduce under-reporting and (2) to contextualize the findings and provide insights into possible explanations for the estimated prevalence of lifetime history of abortion within the study sample. Because of the novelty of the abortion list experiment method, we also tested the method for a design effect, the absence of which is a necessary assumption required for valid estimation,<sup>27</sup> and compared the estimates with estimates from a direct measure of abortion history captured within the same sample of women. We used in-depth interviews with 16 Turkish family planning providers and community stakeholders to understand the barriers to accurate reporting of abortion behaviors in the sample of women.

## Methods

### *Quantitative methodology*

We conducted a cross-sectional household survey in two communities in Istanbul (Bagcilar and Kucukcekmece) between March and June 2018, as part of an evaluation of the Willows International Reproductive Health Program (Willows Program). The Willow Program was a contraceptive counseling and education intervention implemented in Turkey, Pakistan, Ghana, and Tanzania, between 2018 and 2020. In Turkey, the intervention was carried out in the community of Bagcilar, Istanbul. Willows International selects their intervention sites based on community need for family planning and in consultation with local health authorities. The research team, in consultation with the Willows International Turkey branch, selected the community of Kucukcekmece, Istanbul, to serve as the comparison site. It was primarily

chosen based on having similar demographics of women in the intervention site. Furthermore, neither study site had a previous or ongoing community-based family planning program. The primary goal of the parent study was to evaluate the effectiveness of the Willows Program on contraceptive outcomes. This research was approved by the ethical review board of Bahçeşehir University, and by the Institutional Review Board at Harvard University.

Bagcilar and Kucukcekmece are both located west of Istanbul city center and comprised primarily of low-income, Kurdish populations. The neighborhoods are large, with over 700,000 residents, and attract many migrants from Eastern and Southeastern Anatolia. As compared to married women age 15–49 years who live in the Istanbul region, smaller proportions of women in our study sample used modern contraceptive methods (37% in our study sample compared to 51% in the 2018 Turkey Demographic and Health Survey (TDHS)<sup>20</sup>), but slightly larger proportions reported use of any family planning method (72% in our study sample compared to 69% reported in the 2018 TDHS<sup>20</sup>). In terms of background characteristics, married women in our sample were less educated and older compared to all women nationally.<sup>20</sup>

A minimum sample size of 4000 women (2000 in Bagcilar and 2000 in Kucukcekmece) was predetermined based on a power calculation in our main outcome, the modern contraceptive prevalence rate, to give a 0.9 probability of being able to detect a five percentage point difference between the groups. Using the National Statistics Institute (TURKSTAT) address list, we randomly sampled streets in each site. In total, 166 streets out of 296 streets were sampled in Bagcilar, and 87 streets out of 101 streets were sampled in Kucukcekmece. For streets with more than 100 households in Bagcilar or more than 200 households in Kucukcekmece, households were randomly sampled. Two hundred households, rather than 100, were selected in Kucukcekmece due to the slightly larger size of the community. In Bagcilar, there were 36 sampled streets with more than 100 households; we randomly selected 100 households. In Kucukcekmece, there were 29 sampled streets with more than 200 households; we randomly selected 200 households. In total, 9664 households in Bagcilar and 8934 households in Kucukcekmece were randomly sampled. Some households refused the interview or were not available, resulting in 5276 households reached in Bagcilar and 4787 households reached in Kucukcekmece. Among the households that were reached, some households did not speak Turkish or English, had no eligible women, or could not participate for other reasons. In total, 8100 women (4164 women in Bagcilar and 3936 women in Kucukcekmece) were asked to participate in the survey, and 4122 (50.9%) completed the survey, 3270 (40.4%) were not available after three attempts, and 606 (7.5%) refused to participate.

Female enumerators approached women in their homes, introduced themselves, stated their affiliation as researchers with [blinded for review] University, informed women they were conducting a study about reproductive health, and screened them for eligibility. All married women between the ages of 16 and 44 years—who were usual residents of the households in study communities, could consent to participation, and could communicate in English or Turkish—were eligible for the study. Due to the topic of the study and the sensitive nature of our survey questions, we agreed to the decision by the Turkish research collaborators, the Turkish field company, and the Willows International Reproductive Health Program branch in Istanbul, to focus only on married women. If more than one eligible woman lived in a household, we randomly selected one to participate in the study using a randomization mechanism through our web-based data collection application. In Bagcilar, 18 households had more than one eligible woman, and in Kucukcekmece, 13 households had more than one eligible woman.

Women were provided details about the study in Turkish or English, including the nature of the study, research objectives, benefits and risks, contact information for study investigators, and how their privacy would be maintained. The informed consent script was read aloud to women, including a portion on women's rights to refuse to participate, not answer any question(s), or withdraw from the study. Enumerators asked participants to provide oral consent to take part in the study. Women were provided small kitchen items, amounting to US\$5, as compensation for interviews.

Enumerators interviewed women in their spoken language using hand-held tablets. Interviews were conducted in locations that provided visual and audio privacy. Only the enumerator and the respondent were present during the interview. The baseline survey included questions about women's socio-demographic background and reproductive and contraceptive history, including questions about abortion. At the end of the survey, women were given the opportunity to make comments and ask questions.

We utilized a double list experiment<sup>28</sup> to measure lifetime prevalence of abortion. A double list experiment is a modification whereby two lists are used, rather than one, and every respondent receives a treatment version of one list (meaning a version of the list with the abortion-related item added) and a control version of the other (meaning a version of the list without the abortion-related item). The two groups, thus, serve as the "control" for the other since they received both lists with only one of the lists altered to include the sensitive item. Before answering the abortion list experiment items, we used a test list experiment to familiarize respondents with the format. We asked participants:

"Now I will read you a list of statements, and I would like for you to tell me how many of the statements are true for you. You should not tell me which statements are true, only how many. By giving only the number of statements that are true

for you, this will preserve your privacy as I will not know which statements are true for you. After I read the list, please tell me how many of these statements are true for you. First, we will complete an example: 1. I have three children; 2. I am 22 years old; 3. I have received antenatal care during a pregnancy; 4. I have had a tetanus toxoid vaccination . . . How many of these statements are true for you?"

Then, we asked respondents, "Do you have any questions about how to answer these questions?" If respondents had questions, interviewers were instructed to address all their concerns and review the test list.

We collected data using an electronic tablet-based survey, which we programmed to randomly split respondents into two groups: 2023 respondents in Group 1 and 2017 respondents in Group 2. The abortion-related item was randomly added to either List A or List B, and the other list was left in its original form. Group 1 received control List B then treatment List A; Group 2 received control List A then treatment List B. The abortion item read, "I have ever had an induced abortion (ended a pregnancy on purpose)." Other items on List A included: "I have had a cold or flu in the last year," "I have heard of an illness called diabetes (high blood sugar)," "I have been diagnosed with hepatitis," and "I have been diagnosed with cancer." Other items on List B included: "1. I have heard of an illness called tuberculosis (TB)," "I have received a medical injection in the past 2 years," "I currently smoke cigarettes at least once per week," and "I have been diagnosed with heart failure." For each list, the participant provided the total number of items that she had experienced.

We piloted all survey questions, including the list experiment, with 43 women residing in Bagcilar whose streets or households were not randomly sampled to be included in the study. We did not modify any list experiment items following the pilot. However, we did address technical issues with the data collection app, such as skip pattern errors and issues with the randomization component. We also added notes for enumerators (e.g. prompts to check that participants understood the practice list experiment before moving to the abortion list experiment). We tested the survey again after modifications to ensure that the app was functioning properly.

In a subsequent portion of the survey, we asked women direct questions about their abortion experiences. We intended to eliminate the potential impact of answering direct questions about abortion might have on responses to the list experiment. First, we asked, "Have you ever had a pregnancy that miscarried, was aborted, or ended in a still-birth?" If the respondent said yes, we asked, "How many pregnancies were terminated by induced abortion (intentional termination of pregnancy)?" Women could have responded "don't know" or refused to answer the question.

We conducted analyses in the Stata version 15 (StataCorp, College Station, TX, 2015) and the R statistical platform (R Development Core Team, Vienna, Austria, 2015). We first calculated the proportions of



women who have ever had an induced abortion according to (a) the list experiment data and (b) the direct question. We calculated the average for each list. The averages for the control versions of the lists were subtracted from the treatment versions of the lists to generate an estimate of the population proportion that had ever had an abortion. Then, we averaged the estimated difference in proportion from the two lists to obtain a final estimate of lifetime abortion prevalence. Next, we replicated the same procedure using sampling weights to account for design weight and non-response. The weighted data are representative of the study areas separately. The probability that a woman in each site was sampled was:  $p_1 \times p_2 \times p_3$ , where  $p_1$  is the sampled street/total streets in site,  $p_2$  is the sampled households/total households on street, and  $p_3$  is the sampled woman (1)/eligible women in households. The inverse of this probability was used to construct the sample weights to make the sample representative of the area population.

We then assessed the list experiment data for a design effect, which occurs if the expected number of control items reported depends upon whether or not the list includes the sensitive item.<sup>27</sup> For example, if a respondent presented with the treatment list (i.e. the list with the abortion-related item added) intentionally responds that she has only experienced one item on the list, when in reality it was two, then the list experiment does not meet the assumption of no design effect. As an initial diagnostic test, we calculated the difference between the treatment and control groups in the proportions of participants with at least each number of items on the treatment and control lists, and then repeated the calculation for each number of control items. Positive differences would indicate that a design effect was unlikely,<sup>27</sup> while negative differences would imply that some individuals altered their responses to control items based on the presence of the sensitive item. These results are presented in Table 2. Next, we used the R “list” package<sup>27</sup> to implement a likelihood ratio test, which assesses whether the difference in the proportion reporting a given number of items on the control list, compared to the treatment list, is significantly different from zero in the negative direction. These results are presented in Table 3.

As a last step, we separately calculated the proportion of women who reported that they had received an abortion from a direct question, and then compared the estimate from the direct question to the double list experiment estimate. Similar to the list experiment estimate, we used sampling weights to estimate a proportion that accounted for design weight and non-response.

### Qualitative methodology

In May 2019, we conducted in-depth interviews with key informant stakeholders—community stakeholders and health providers—in Bagcilar to contextualize the quantitative

findings of our survey. In total, we conducted 16 interviews with family planning providers (8) and community stakeholders (8). We purposively selected family planning providers who were providing services in the study communities; our study communities did not have any other community-based sexual and reproductive health organizations working in the area. We did not require family planning providers to also provide abortion services, and we did not directly ask providers whether they provide abortion services due to the highly sensitive nature of abortion in this context.

The primary intent of the interviews with the community stakeholders was to understand their perceptions of the Willows Program in their communities. Community stakeholders can influence the provision of community-based sexual and reproductive health services, and thus, their perspectives about reproductive health, family planning provision, and the Willows Program were vital to our impact evaluation. We purposively selected stakeholders who were members of local governments or local political organizations, women’s groups, religious leaders, and community leaders. We determined the number of interviews based on what would be sufficient to achieve theoretical saturation.<sup>29</sup>

Participant recruitment was performed with the assistance of a local field company that had experience conducting qualitative studies in the area. Using a purposive sampling approach, we used a health facility survey that was conducted after the women’s interview survey (between August and October 2018) and in the same study areas to identify potential family planning providers in the study area. Between April and May 2019, we called health facility staff who had participated in the survey. Utilizing a recruitment script, we asked potential participants if they would like to be part of a study to share their perspectives and experiences in providing family planning and/or abortion services to women at their health facility. At the same time, we generated a list of community stakeholders through collaboration with the field company. We used snowball sampling to identify and recruit additional community stakeholders who had knowledge and perspectives on family planning and/or abortion services in Istanbul.

A trained Turkish female interviewer who was affiliated with the local field company conducted the interviews. We met with the interviewer for 1 day and reviewed the principles of qualitative research, including ethics and in-depth interviewing techniques. The interviewer conducted role-playing activities with the research team and was provided feedback.

We developed two semi-structured interview guides in English (one guide for family planning providers and one guide for community stakeholders), and Turkish researchers translated the guides into Turkish. Interview guides touched on several topics related to both the supply- and demand-side factors influencing access to contraception and abortion services, including attitudes toward and

demand for contraception and abortion and socio-cultural beliefs that influence contraceptive and abortion behaviors. Preliminary results from the women's survey informed the development of topics of conversation and questions; however, we were also concerned with key informants' perspectives of the Willows Program. We pre-tested the interview guides with two participants to assess question phrasing, sequencing, and overall comprehension. Furthermore, the pilot test served as additional training for the interviewer. Colleagues at [blinded for review] provided extensive feedback on the translated transcriptions, highlighting questions that could be re-phrased or areas in which the interviewer could improve their interviewing technique. The interview guides were modified based on pre-testing.

Before each interview, the interviewer asked the participant to provide oral consent to take part in the study. Oral consent, rather than written consent, was obtained so that no identifying information could connect participants with the study. Furthermore, no other identifying information was collected from participants. Interviews were conducted one-on-one in Turkish in a private space either on-site at a health facility in the case of family planning providers or in community stakeholders' homes. Interviews were audio recorded with the participant's permission and subsequently transcribed and translated to English for analysis. On average, interviews lasted approximately 1 h.

We used ATLAS.ti (version 8.0, Scientific Software Development, Berlin) for data management, coding, and analysis. We applied a multi-stage analytical strategy, following the principles of the constant comparative method,<sup>29</sup> to develop codebooks and identify key themes. We followed an inductive approach whereby themes and patterns emerged from the data, rather than deductively testing the data for pre-specified theories. First, we worked in a team of five (one member from the [blinded for review] University team and four members from the [blinded for review] University team) to develop a codebook. All members of the team read several transcripts, and in vivo and open codes were applied to all text. Next, we merged all coded transcripts together and reviewed codes one-by-one (over 200 codes). We discussed meanings of codes and formulated definitions. Similar codes were merged together, while other codes were expanded. Then, we developed a final codebook, consisting of 51 sub-codes nested within six coding groups. The codebook contained information about each code's definition, coding group, verbatim examples, and inclusion/exclusion criteria.

Using the final codebook, four members from the [blinded for review] University team coded all transcripts; transcripts were double-coded. The [blinded for review] University team member reviewed the applied codes at appropriate stages. Finally, we ran queries and code frequencies in ATLAS.ti and re-read the coded transcripts to synthesize themes and identify similar narratives. The

coding team came to agreement on categories and key themes. Themes were defined, and direct quotations from transcripts were used to provide evidence for each theme.

## Results

### Quantitative results

The final sample completing the abortion list experiment consisted of 4040 women from the two study areas with complete information on abortion and socio-demographic questions. Table 1 presents the characteristics of women included in the study sample disaggregated by list group. The majority of women were older than 24 years (88.2%), Muslims (99.8%), Kurdish (59.2%), and in the highest wealth quintile (51.4%). Large proportions of women had completed primary education (46.4%) and had two (30.5%) or three (30.5%) living children. Most women were married before age 25 years (86.1%) and over half had ever used a modern method of contraception. Characteristics of women by group provide evidence that we largely achieved randomization. Proportions of characteristics were equal between Group 1 and Group 2, with the exception of ethnicity, number of lifetime births, and ever use of modern contraception.

Table 2 provides a detailed assessment of response proportions by the number of reported items, by list, as the initial diagnostic for design effects. The treatment-control differences in proportions were positive, and consistent with the assumption of no design effect (25). Under the assumption of no design effect, we estimated the population proportions of each respondent type. These estimates are presented in Table 3. The likelihood ratio test for the design effect was not statistically significant for either list ( $p_{List A}=1.0$ ;  $p_{List B}=0.769$ ). Thus, we conclude that there was no clear statistical evidence for a design effect. In other words, respondents did not alter their responses to the control items based on whether or not the abortion item was added to the list.

Table 4 presents the list experiment abortion prevalence estimates overall, along with the direct abortion estimates. The difference in mean values estimator produced a weighted, lifetime abortion prevalence estimate of 5.79% and 0.70% for List A and List B, respectively, resulting in an average final estimate of 3.25% (95% confidence interval (CI): -0.40, 6.9). The list experiment estimate was not statistically different from the estimate produced by the direct question (2.97%). The list experiment did not produce significantly higher rates of lifetime abortion prevalence, and our prevalence rates were substantially smaller than those recently estimated by the 2018 TDHS (15% among ever-married women in 2018).<sup>20</sup> Although the study populations differ (currently married women vs ever-married women), we concluded that, in our study, women under-reported lifetime abortion behaviors in the direct question and as estimated by the abortion list.

**Table 1.** Selected background characteristics of study sample by group.

Characteristic	Total (n = 4040)		Group 1 <sup>a</sup> (n = 2023)	Group 2 <sup>b</sup> (n = 2017)
	Unweighted (%)	Weighted (%)	Weighted (%)	Weighted (%)
<b>Age (years)</b>				
16–19	1.3	1.1	1.3	1.0
20–24	10.5	11.2	10.8	11.6
25–29	20.0	20.0	20.4	19.6
30–34	22.0	22.0	21.6	22.5
35–39	22.4	22.4	21.4	23.4
40–44	23.9	23.2	24.6	21.9
<b>Education</b>				
No education/primary incomplete	20.4	20.4	19.9	20.8
Primary	46.4	45.2	46.4	44.5
Secondary	17.4	18.2	18.6	18.2
Higher	15.7	16.0	15.2	16.5
<b>Religion</b>				
Islam	99.8	99.8	99.9	99.8
Others	0.2	0.2	0.1	0.2
<b>Wealth quintile</b>				
Lowest	24.3	23.2	23.1	23.3
Middle	24.3	24.6	24.3	24.8
Highest	51.4	52.2	52.6	51.9
<b>Number of lifetime births</b>				
0	11.5	12.2	11.0	13.5
1	17.3	17.2	16.8	17.6
2	30.5	29.7	30.5	28.9
3	22.8	23.2	23.4	23.0
4 or more	18.0	17.7	18.3	17.0
<b>Ethnicity</b>				
Turkish	59.2	58.8	57.8	59.7
Kurdish	32.2	30.7	32.4	29.0
Others	8.6	10.5	9.8	11.3
Ever used modern contraception	58.4	58.4	56.3	60.4
<b>Age at first marriage or cohabitation</b>				
<20	42.2	41.9	42.8	41.0
20–24	43.9	44.6	43.8	45.3
25–29	11.4	11.2	11.1	11.3
>29	2.5	2.3	2.2	2.4

<sup>a</sup>Group 1 received control List B then treatment List A.

<sup>b</sup>Group 2 received control List A then treatment List B.

### Qualitative results

We wanted to understand and explore possible reasons for under-reporting abortion behaviors in this context. In the following section, we present the findings from in-depth interviews with family planning providers and community stakeholders to contextualize the quantitative results.

**Participant demographics.** Table 5 presents selected background characteristics of participants. In total, we interviewed eight family planning providers and eight community stakeholders. Six of the family planning providers were physicians/gynecologists and two were midwives. Providers had been providing family planning services between 1

and 22 years. With regard to the community stakeholders, six were involved in the Justice and Development Party (a conservative political party which has been in power for the last 17 years), the local parent–teacher association, and/or a local prayer group. One community stakeholder worked as a pharmacist assistant and another was a pharmacist. The pharmacist was considered a community stakeholder, as she frequently provided informal advice to women about family planning and other ideas on fertility planning.

**Qualitative themes.** Four themes emerged from the transcripts, providing possible explanations about abortion behaviors in the community and rationale for either low self-reported abortion prevalence or limited use of

**Table 2.** Detailed assessment of response proportions by the number of reported items in the entire sample by list.

Estimated proportion	Source	Number of reported items						Sum
		0	1	2	3	4	5	
<b>List A</b>								
Row 1	List with abortion	0.056	0.337	0.588	0.018	0.002	0.000	1.000
Row 2	Proportion at least	1.000	0.944	0.607	0.019	0.001	0.000	–
Row 3	List without abortion	0.060	0.385	0.540	0.016	0.000	0.000	1.000
Row 4	Proportion at least	1.000	0.940	0.555	0.015	0.000	0.000	–
Row 5	Row 2 – Row 4	0.000	0.004	0.052	0.004	0.001	0.000	0.061
<b>List B</b>								
Row 1	List with abortion	0.033	0.276	0.684	0.007	0.000	0.000	1.000
Row 2	Proportion at least	1.000	0.967	0.691	0.007	0.000	0.000	–
Row 3	List without abortion	0.033	0.280	0.684	0.003	0.000	0.000	1.000
Row 4	Proportion at least	1.000	0.967	0.688	0.003	0.000	0.000	–
Row 5	Row 2 – Row 4	0.000	0.000	0.003	0.004	0.000	0.000	0.007

Rows 1 and 3 represent the proportion reporting each number of items on the treatment and control lists, respectively. Rows 2 and 4 represent the proportions reporting at least each number of items on the treatment and control lists, respectively. Row 5 represents the differences between Rows 2 and 4, which is equal to the proportion of women who report having an abortion and the total number of treatment list items indicated by the column.

**Table 3.** Estimated proportion of respondent types,  $\hat{\pi}_{yz}$ , for each of the two lists, characterized by the total number of affirmative answers to the control questions,  $y$ , and the truthful answer for the sensitive item (1 indicates affirmative and 0 represents negative).

y value	List A				List B			
	$\hat{\pi}_{y0}$	SE	$\hat{\pi}_{y1}$	SE	$\hat{\pi}_{y0}$	SE	$\hat{\pi}_{y1}$	SE
0	4.75	0.0047	0.51	0.0069	3.07	0.0038	-0.16	0.0054
1	33.00	0.0119	5.12	0.0154	27.57	0.0109	0.45	0.0145
2	54.59	0.0115	0.49	0.0042	68.41	0.0104	0.30	0.0022
3	1.29	0.0030	0.25	0.0011	0.35	0.0013	0.00	0.0000
4	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
Total	93.63		6.37		99.40		0.59	

SE: standard error.

**Table 4.** Estimates of the percentage of women who have had an abortion in their lifetime.

	List A estimate	List B estimate	Average of Lists A and B	95% CI	Direct question	Difference between average of lists and direct question
Unweighted	6.37%	0.59%	3.48%	1.68, 5.29	2.80%	0.68%
Weighted	5.79%	0.70%	3.25%	-0.40, 6.9	2.97%	0.28%

CI: confidence interval.

Results from list experiment estimators, by each list (A and B), combined, and direct question ( $n=4040$ ).

abortion services. Themes included the following: differing definitions of abortion, inaccessibility and provider bias, lack of information of abortion laws and safety, and religious norms.

First, some participants described abortion as “bringing on a miscarriage,” and respondents often used the phrase when describing an induced abortion. Miscarriage and abortion seem to be used interchangeably in participants’ narratives. A pharmacist assistant who had been in her

position for 20 years described situations in which women came to the pharmacy seeking pills for an induced abortion. The pharmacist assistant used the term miscarriage to describe the resulting effect (i.e. an intentional termination of pregnancy) of a woman using these pills:

They make plans in their heads; they think that they will have a miscarriage when they use abortion pills. (Interviewee 4, community stakeholder)



**Table 5.** Selected background characteristics of key informants.

Participant number	Type	Gender	Current position/community role	Length in current position	Length providing family planning services
01	Community stakeholder	Female	Ak Parti member and parent–teacher association member	–	–
02	Community stakeholder	Female	Prayer group leader	–	–
03	Community stakeholder	Female	Pharmacist	36 years	–
04	Community stakeholder	Female	Pharmacy assistant	20 years	–
05	Community stakeholder	Female	Neighborhood representative’s assistant	–	–
06	Family planning provider	Female	Physician	8.5 years	8.5 years
07	Family planning provider	Female	Midwife	14 years	14 years
08	Community stakeholder	Female	Parent–teacher association member	–	–
09	Family planning provider	Male	Gynecologist	20 years	20 years
10	Family planning provider	Female	Gynecologist	14 years	22 years
11	Community stakeholder	Female	Ak Parti neighborhood representative	–	–
12	Community stakeholder	Female	Parent–teacher association member	–	–
13	Family planning provider	Female	Gynecologist	1 year	1 year
14	Family planning provider	Female	Midwife	10 years	10 years
15	Family planning provider	Female	Gynecologist	4 months	7 years
16	Family planning provider	Female	Gynecologist	17 years	17 years

Another participant (Interviewee 1) described her own “abortion” experience. She said that she had an abortion because, “The babies die inside of me, they can’t survive.” Although she described her experience as an abortion, her description of the events may be more accurately characterized as a miscarriage. This participant also said that other women typically have abortions only when, “the baby is dead inside,” and described how women try to have “miscarriages” to end a pregnancy:

The neighbor is the midwife, a midwife in the village. She doesn’t have a certificate or anything but she knows how to deliver babies. So they go and ask her or do what they can to have a miscarriage . . . Actually, there was one. She didn’t want to have an abortion at the hospital so she was trying at home by lifting heavy things or using some pills to have bleeding. (Interviewee 1, community stakeholder)

If women use differing language to discuss and describe abortion behaviors, or if women do not believe certain behaviors are “counted” as abortion, then it may be that prevalence is not accurately captured in surveys or other self-reports, and/or key informants may report low prevalence.

Second, abortion services seem to be difficult to access. Many family planning providers reported that their institutions do not offer abortion services on request due to personal beliefs or other logistical reasons. Instead, it seemed that many facilities only offer induced abortion when medically necessary:

If the baby’s heartbeat has stopped or the mother has had an incomplete miscarriage, [an abortion] can be performed . . .

But it has to be a medical necessity. Elective abortion is not available, as the hospital management does not want it. (Interviewee 15, family planning provider)

Elective abortion is not available. Why not? Because this is a very busy hospital and there are not many gynecologists that will perform it. It is because of their beliefs. It is problematic, too; you have to arrange anesthesia etc. So we do not provide this service . . . Generally, it depends on the doctor’s preference. There is no certain rule. (Interviewee 16, family planning provider)

Furthermore, many providers said that they will not perform induced abortions on request due to their personal or religious beliefs, even if abortion is permitted at the facility that they work at. Family planning providers who consciously objected to performing abortions cited common anti-abortion rhetoric that, “abortion is murder,” “every life is valued,” or assigning personhood to fetuses. Indeed, only one family planning provider (Interviewee 9) believed that a woman, “had the right to choose,” and another provider (Interviewee 14) reported that she felt conflicted about whether or not to provide abortion services. Thus, under-reporting may be due to the fact that women cannot reasonably access abortion services in healthcare facilities:

I do not end healthy pregnancies; this is my principle. I have never done it. We do it if it is a medical necessity. We respect every living thing. But if the baby has some serious defect like an undeveloped head or if there is an incomplete miscarriage, we will help them end the pregnancy, of course. But if it’s perfectly healthy, I will not do it. I think I would feel uneasy

about it. It is a life, after all, and I do not want to be the one who takes it. (Interviewee 13, family planning provider)

I am totally against abortion, literally. To be honest, because of religious reasons . . . When they say they have three or four children and don't want that one, I go against them because you should either use a birth control method or give birth . . . If it has happened, let it happen. I think abortion is murder. (Interviewee 6, family planning provider)

Third, abortion prevalence may be low due to lack of information about abortion laws or believing that abortion is harmful. Some community stakeholders reported that induced abortion is only permissible if there is threat to the mother's life or serious complications with the fetus. It seemed as though these respondents believed that a woman cannot obtain an abortion on request, in contrast to the law that has been in place since 1983. If women do not know that abortion is legally permissible on request up to 10 weeks of gestation, then they might turn to private providers that charge high rates for services or unregistered providers or facilities that could be deemed unsafe:

If the baby is dead inside or if you have another problem, you can have an abortion. But you cannot have an abortion by saying that you don't want to give birth . . . That's what I hear and see . . . I know that even the private hospitals don't do [abortions on request]. (Interviewee 12, community stakeholder)

Several respondents report that induced abortions, even abortions conducted at facilities by trained providers, are harmful to women, potentially deterring women from seeking services or under-reporting of unsafe services. The "riskiness" of abortion was also a reason that some providers reported as justification for not providing services:

[Abortions] might cause bleeding and uterine perforation and so many other complications other than ending the pregnancy. It is risky. If the baby has a heartbeat, it can cause more bleeding during the operation. So we don't accept it as a birth control method and don't provide abortion services. (Interviewee 13, family planning providers)

[Abortion] hurts, and it is inconvenient. A piece [of the fetus] stays in and women are not satisfied with their hospital . . . When a piece stays in, they have a problem. (Interviewee 1, community stakeholder)

Finally, religious norms deter willingness to report abortion. The majority of respondents reported that they, and most women and men in their communities, believed abortion to be a sin. Indeed, abortion as a sin was one of the most frequently discussed topics across all interviews:

[Pregnant women] have a dilemma. On one hand, they want to end an unwanted pregnancy. On the other hand, they are afraid of committing a sin. It is traumatic for the woman to

make a decision. It is a trauma for her if she has an abortion, too. It is very serious because she thinks she is the one to blame. (Interviewee 3, community stakeholder)

Of course, [abortion] is considered as a sin. It is said that it is a great sin. I think so too, because you kill a life that God gives. (Interviewee 12, community stakeholder)

Two respondents discussed the value and emphasis placed on religious values in their communities. Thus, even when a woman wants to end a pregnancy, she may decide to give birth, instead, rather than being subjected to religious repercussions, which participants reported to be more serious than having an unwanted birth:

The only thing they (referring to larger society) say is that [abortion] is a sin . . . No one says that it is the women's right to end an unwanted pregnancy or that women have that right as much as men . . . What can you say in a society based on religion? If everything is based on religion even the government; and if it is used in every way, what can you say? (Interviewee 3, community stakeholder)

They (referring to the people in the community) think [abortion] is a sin . . . They will give an account of their sins before God, so they wouldn't do it. Now, sin is a very important topic here, the same for men . . . When someone in our family, our father, brother, husband, makes a baby, he wouldn't say "go and have an abortion." God gives it; we think that way. (Interviewee 2, community stakeholder)

## Discussion

Our study is the first to apply the abortion list experiment in Turkey, and results suggest that the method may not be feasible in similar settings where abortion is not legally restricted but highly stigmatized. The abortion list experiment estimates were slightly higher than those from the direct question; however, estimates were not statistically different from one another. We found no statistical evidence for a design effect in either list—a key assumption of the list experiment methodology. Our estimates likely underestimate the true prevalence of lifetime abortion, given that the 2018 TDHS found estimates triple ours.<sup>20</sup> However, we note that differences in prevalence estimates could be due, in part, to methodological differences: TDHS estimates are nationally representative of ever-married women and our study estimates can only be generalized to married women in our study communities. Qualitative evidence suggests that differing definitions of abortion, inaccessibility, provider bias, ignorance of abortion laws and safety, and religious norms could contribute to under-reporting of abortion behaviors. Furthermore, our findings suggest that abortion is not always consistently defined or conceptualized, and this can compromise our ability to estimate prevalence whether using the list experiment, direct questioning, or other methodologies.

In low- and middle-income contexts, the abortion list experiment has produced mixed results.<sup>16</sup> In Liberia, the list experiment produced estimates five times higher than previous estimates from direct questioning.<sup>13</sup> However, in Vietnam<sup>30</sup> and India,<sup>15</sup> application of the list experiment resulted in lower-than-expected estimates (based on self-reports from other studies and estimates obtained within the same sample). In our study, there was no evidence of a design effect, but the list experiment did not perform better than direct questioning. Taken together, results suggest more limited and focused application of the list experiment in developing countries, and researchers should test the validity of the method across settings. For example, several methods to measure abortion could be implemented simultaneously, as was done by Keogh et al.<sup>19</sup> to identify the most valid approach.

Question wording can impact how women respond to the abortion list experiment. A study on self-managed abortion in the United States found that women's self-reports varied according to question phrasing through the use of cognitive interviewing.<sup>12</sup> In our study, key informants' narratives suggest that women seek abortion services outside of the formal healthcare system and, as a result, tended to discuss abortion experiences as "miscarriages." For example, one of our respondents reported that women do not go to facilities for abortion, and instead have "miscarriages" at home by themselves, suggesting that an induced abortion outside of the formal healthcare system or medical abortion may not be considered an abortion. Our study findings support previous studies assessing women's descriptions of their abortion experiences. A qualitative study of US women and healthcare providers found that use of medical abortion methods allowed their patients to consider a pregnancy termination to be "less of an abortion" and many patients spoke of medical abortions as miscarriages.<sup>31</sup> Another qualitative study conducted in four Latin American countries found that women described the process of medical abortion as having a miscarriage or as a form of menstrual regulation.<sup>32</sup> It may be that if we would have worded our question differently or clarified that medical abortion was included in the definition of intentionally pregnancy termination, we would have obtained different estimates. Future studies should compare how terminology around abortion influences if and how women report their experiences.

In the qualitative interviews, we found that many respondents knew little about safe abortion, which may reflect their community's level of knowledge. Women's lack of awareness of service availability and/or of the legality of abortion on request are significant barriers to access. These perceptions may be, in part, to prominent pronatalist discourse by Turkish politicians and health ministers in the media. Over the past few years, Turkish politicians have been cited equating abortion to "murder" or as "immoral" which cultivates objections to abortion on

religious grounds. This discourse may also impact healthcare providers' beliefs and their willingness to provide services. A study of medical residents in Turkey found that while most believed abortion should be available (86%), only 15%–16% expressed willingness to perform either medical or surgical abortion services.<sup>33</sup> We observed that several family planning providers objected to abortion provision and held anti-abortion attitudes, repeating common anti-abortion rhetoric. Other studies in Turkey confirm that many healthcare providers hold negative beliefs about abortion services,<sup>34</sup> have limited information about the legal status of abortion, and lack correct knowledge on abortion.<sup>33</sup> However, as respondents noted, women trust family planning providers to provide them with medically accurate, non-biased information. If women seek advice from providers who object to abortion, it may be likely that they will receive biased information.

We also found that abortion services are largely inaccessible in formal healthcare settings according to reports from a small sample of key informants. Other studies have found that few state and research hospitals provide abortion services without restriction, and many facilities provide no services.<sup>22</sup> Furthermore, 53 of the 81 provinces in Turkey do not have a state hospital that provides abortion care without restriction.<sup>22</sup> Most women receive abortion services in private hospitals even though they are more costly than public hospitals. Abortion service provision is difficult, because few physicians are trained on abortion services, there are limited resources, and time constraints that make providing abortion care difficult.<sup>35</sup>

This survey was conducted in a large, representative sample of married women of reproductive age in densely populated communities in Istanbul, the largest city in Europe. We are unable to generalize the study findings beyond the study sample (i.e. married women in Bagcilar or Kucukcekmece); however, the large sample allowed us to test a new methodology for measuring abortion in a highly stigmatized setting in which many women are likely to under-report in direct questioning. Furthermore, limiting the sample to women who were currently married does not allow us to generalize to unmarried women, and may also explain differences between our study estimates and estimates presented in the TDHS (2018). We also did not achieve a high response rate (51%), compared to nationally representative surveys, such as TDHS (2018) (81%). However, similar to TDHS, the primary reason for non-response in our survey was failure to contact women at home after several repeated attempts (40.4% of women in our survey were unreachable). Issues with reaching women could have been the result of our study design (i.e. only approaching eligible women in their homes, rather than at their place of employment or in the community) or may have been attributable to interviewer burnout, which we plan to investigate in a future analysis. Regardless, we achieved our target sample size that was needed to detect a

five percentage point difference in the modern contraceptive prevalence rate between the intervention and comparison groups (the primary aim of the parent study).

The list experiment has limitations for measuring abortion behaviors, including difficulty in estimating total number of abortions and inability to ask follow-up questions. While the list experiment may outperform other methods in some settings, we did not find it to significantly improve estimates over what can be measured from women's direct reports in Turkey. Measuring experiences of abortion is critical to understanding women's needs, allocating resources, and informing harm-reduction strategies. Improvement of abortion measures and tracking prevalence and trends over time is useful for evaluating the effectiveness of policies related to family planning. Innovations in measurement are needed to estimate abortion prevalence in highly stigmatized settings, and studies should take into consideration the common terminologies used to describe abortion experiences.

Our qualitative data also had limitations. Community stakeholders were purposively selected based on their familiarity with women's health topics, including family planning and abortion. Although these participants are leaders in their community, their beliefs may not reflect those of women. However, we believe that the broad range of perspectives minimized bias, and their interviews allowed us to understand broader structural issues at play. Also, as an interview study, social desirability and threats to confidentiality cannot be ruled out. To minimize these risks, interviews were conducted in private spaces, written consent was not obtained, and the interviewer was a trained professional in qualitative research not affiliated with any local organization or lived in the communities. Finally, because the original purpose of key informant interviews was to understand participants' perspectives about the Willows program, we only conducted interviews with providers and stakeholders in Bageilar, but abortion prevalence estimates were derived from both the intervention and comparison samples. It is possible that residents of Bageilar are more conservative in their views and, thus, interviews with stakeholders in Kucukcekmece would have provided a fuller picture of attitudes about abortion in both communities.

### Policy and practice implications

Our study uncovered many potential barriers to accessing safe abortion care in health facilities. Provision of abortion in public hospitals is quite difficult, and safe services are difficult to find. Lack of access to safe abortion services could result in unsafe abortion and maternal-related death and disability. Policy needs to make clear the responsibility of hospitals and providers to provide safe abortion services to those who are entitled. Turkey does not have a policy concerning conscientious objection, but it is clearly widespread.

Commitment from political leadership is needed to ensure that providers who do offer abortion are supported and women are not denied abortion without legal justification. Furthermore, we recommend that providers be trained about abortion, including the relative risks, safety, procedures, and prevalence, to improve abortion care, and that interventions are designed to reduce provider bias (e.g. in-hospital social marketing campaigns).

### Conclusion

Clearly, more work is needed to meet women's needs for safe abortion services at the interpersonal, community, and national levels in Turkey. High levels of stigmatization among providers may prevent women from seeking safe services, even when services are legally available on request. Future research on the abortion list experiment, and on other methods for eliciting abortion reporting, should incorporate cognitive interviewing to understand how women interpreted the pertinent questions and whether they felt comfortable discussing this information in this unique format. Abortion decision-making, provider bias related to abortion, and unsafe abortion prevalence are also topics that need immediate exploration in the context of Turkey. Finally, more research is needed to understand how women in Istanbul, obtain abortions or self-induce abortion, given the relatively poor accessibility of services.

### Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The Willows Study was funded by an anonymous donor.

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