ORIGINAL ARTICLE

Frequency and profile of induced abortions: hospital based study in tertiary hospitals in Egypt

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Summary

Objectives. *To determine the frequency and profile of induced abortions among hospitalized cases of abortions in three tertiary hospitals in Egypt.*
Methods. *A total of 517 consecutive cases of abortions with complete records were enrolled from three tertiary hospitals in Egypt: two hospitals in Cairo and one hospital in Alexandria. A data extraction sheet was designed to extract the required information from the records. It included: File No., Age, marital status, occupation, parity, number of children, previous abortion, history of contraception, trial of induction for this abortion and management of abortion in the hospital. The World Health Organization (WHO) criteria of categorizing the abortion as possible, probable or certainly induced abortion was used for classification of abortion cases.*

Results. *The proportion of classified induced abortions (certainly, probably and possibly induced abortions) was 30.6% in the total sample, being higher in Alexandria hospital (60.9%) compared to 14 and 19% in the other two hospitals respectively. Using the multiple logistic regression, the following factors were found independently related to induced abortions: Alexandria hospital (as proxy for residence), age ≥ 30 years and having more than 2 children.*
Conclusion. *The current study revealed that about one third of hospitalized cases of abortion can be suspected of being induced. Induced abortion may be linked to elder age, higher number of children in the family and probably have geographical variation in Egypt.*

Introduction

The conditions under which abortion is legally permitted are different in different countries [1]. It is estimated that almost 40% of pregnancies over the world are unplanned [2]. However, in Islamic countries, this is completely forbidden except for medical reasons. Where induced abortion is illegal and largely inaccessible, little information is available on abortion practices outside the legal framework, putting women at the edge of unsafe abortion. Unsafe abortion refers to the termination of an unintended pregnancy either by persons lacking the necessary skills or in an environment lacking the minimal medical standards, or both [3]. With such legal, ethical and religious considerations that hinder reporting, occurrence tends to be under-reported in surveys, and unreported or under-reported in hospital records. Only the "tip of the iceberg" is, therefore, visible in the number of deaths and the number of women who suffer severe trauma, or who have an infection or severe blood loss and seek medical care [4].

During rapid transition from high to low fertility, as has been witnessed in Egypt, contraceptive services are often unable to meet the growing demand of couples for fertility regulation, resulting in an increased number of unplanned pregnancies, some of which are terminated

by induced abortion. Also, where less effective family planning methods are commonly used, unplanned pregnancies and, consequently, abortions are likely to occur [4]. This puts additional sight to the importance of the issue of induced abortions nowadays.

The aim of this study is to determine the frequency and profile of induced abortions among hospitalized cases of abortions in three tertiary hospitals in Egypt.

Subjects and methods

The current study was carried out in three tertiary hospitals in Egypt: one university hospital (A) and one specialized tertiary hospital in Cairo (B); while the third hospital is a university hospital in Alexandria (C). The three hospitals were selected as they are the biggest tertiary and reference hospitals in the largest two cities in Egypt: Cairo and Alexandria.

SAMPLE SIZE

A sample size with 95% confidence interval was calculated to be at least 350 hospitalized subjects with abortion to detect proportion of induced abortions of 65% ± 5% according to previous Egyptian study [5]. The same sample size was able to detect a proportion of 35% ± 5% according to more recent published data in

Tab. I. Characteristics of the study group.

	University Hospital in Cairo (A)	Tertiary Hospital in Cairo (B)	University Hospital in Alexandria (C)	Total
No. enrolled	151	205	161	517
Age (M ± SD)	27.6 ± 6.5	27.55 ± 6.3	29.5 ± 5.6*	28.18 ± 6.2
Working women [No.(%)]	8 (5.3)	9 (4.4)	60 (37.3)**	77 (14.9)
No. Children [No. (%)]				
0	58 (38.4)	66 (32.2)	4 (2.5)	128 (24.8)
1-2	62 (41.1)	90 (43.9)	96 (59.6)	248 (48)
≥ 3	31 (20.5)	49 (23.9)	61 (37.9)	141 (27.3)

* $p < 0.05$ **vs**. Hospital A & B; ** $p < 0.001$.

Iran (a country with comparable demographic characteristics like Egypt) [6].

The method of data collection was retrospective medical record review. A total of 517 consecutive cases of abortions with complete records were enrolled from the three selected hospitals. A data extraction sheet was designed to extract the required information from the records. It included: File No., Age, marital status, occupation, parity, number of children, previous abortion, history of contraception, trial of induction for this abortion and management of abortion in the hospital. When any of the required information was missing in the record, the record was not selected. All field investigators were selected with medical background (some doctors and some high institute nurses). They were trained on the extraction sheet. Collected data were randomly re-checked by independent supervisors.

Data from the medical records were extracted anonymously and used only for the current research, The medical record number was used only for validation of data. The following World Health Organization criteria for distinguishing induced from spontaneous abortion were used [7]:

- Certainly induced abortion: when the woman herself provides this information, or when such information is provided by a health worker or a relative (in the case of the woman dying), or when there is evidence of trauma or of a foreign body in the genital tract.
- Probably induced abortion: when the woman has signs of abortion accompanied by sepsis or peritonitis, and the woman states that the pregnancy was unplanned (she was either using contraception during the cycle of conception or she was not using contraception because of reasons other than desired pregnancy).
- Possibly induced abortion: if only one of the "probably" induced conditions listed above is present.
- Spontaneous abortion: if none of the conditions listed above is present, or if the woman states that the pregnancy was planned and desired.

DATA ANALYSIS

Data were coded and analyzed using the SPSS program. Qualitative data were presented in frequency and percentage while quantitative data were presented in mean and standard deviation. Logistic regression was used to identify independent factors related to induced abor-

tions. Odds ratio and 95% confidence intervals were used to quantify the risk.

Results

A total of 517 abortion records were selected for this study from the three hospitals. Alexandria hospital (C) had cases with higher mean age and higher percentage of working women than the other 2 hospitals (Tab. I). As shown in Table II, the percentage of classified induced abortions (certainly, probably and possibly induced abortions) was 60.9% in C compared to 14% &19% in the other two hospitals respectively. No cases with certainly induced abortion were reported in the A and B and 9 cases were classified as certainly induced abortions in C. Among the nine cases classified as certainly induced abortions, 4 of them were induced by a midwife and uncontrolled bleeding was the reason of hospitalization in seven cases. After hospital admission, 6 cases were diagnosed with incomplete abortion and 2 cases with threatened abortion and only one case with septic abortion (Tab. III). Using the multiple logistic regression, the following factors were found independently related to induced abortions: Alexandria hospital (as proxy for residence), age ≥ 30 years and having more than 2 children (Tab. IV)

Discussion

It is estimated that million of pregnancies are voluntarily terminated each year, almost half of them outside the legal national system where the abortions are often performed by unskilled providers or in unhygienic conditions, or both [8].

In studying induced & unsafe abortions, especially in a country like Egypt where such practice is illegal, it is expected that patients will deny induced abortions. Thus, the health care facility is the most logical, cost-effective and convenient place to conduct the research where women with complications are treated. For this reason, the majority of abortion studies have been hospital-based and it is likely that most future studies will be conducted in hospitals as well [9].

The current study showed that the personal characteristics of abortions admitted in hospitals differs from one area to another. In Table I, abortion cases in Alexandria

Tab. II. Frequency of induced abortions in the studied hospitals.

	University Hospital in Cairo (A) No. (%)	Tertiary Hospital in Cairo (B) No. (%)	University Hospital in Alexandria (C) No. (%)	Total No. (%)
Certainly induced	0 (0)	0 (0)	9 (5.6)	9 (1.7)
Probably induced	0 (0)	1 (0.5)	2 (1.2)	3 (0.6)
Possibly induced	21 (13.9)	38 (18.5)	87 (54)	146 (28.2)
Spontaneous abortion	130 (86.1)	166 (81)	63 (39.1)	359 (69.4)

hospital had higher mean age and higher prevalence of working women.

In most of Islamic countries as well in other counties, where induced abortions are illegal, such induced abortions are often under-reported. The WHO classification of abortion was developed to overcome such problem and was used in this study to classify abortions whether induced or not [7]. The present study revealed that classified induced abortions (certainly, probable and possible induced abortions) accounted for almost 30% of the studied cases (Tab. II). A former study, carried out in Egypt many years ago, reported higher prevalence of almost 65% [5]. However, the current study was carried out in tertiary hospitals in the biggest two cities: Cairo and Alexandria in contrast with the former study that took a sample of public hospitals across the different cities. A study carried out in Iran, a country with comparable cultural and religious background to Egypt, revealed that 12% of hospitalized abortions reported that they were illegally induced although about 35% of these pregnancies were not planned which may infer that such abortions percentage is underestimated [6]. Earlier studies showed percentage of induced abortions among all hospitalized abortions ranging from 15% [10] to more than 50% [11] which points to wide variation among different countries.

Table III showed that among the certainly induced reported abortions, 4 cases (44%) were carried out by a midwife. In Pakistan, midwifes also were responsible for 43.8% of induced abortions [12]. In contrast, most cases of induced abortion in Latin America are medication induced [13, 14]. This may be evidently linked to difference in culture and sexual behavior that pose women in some countries like Brazil to earlier and repeated experience. Bleeding was the main cause of hospitalization of certainly induced abortions and all of the 9 cases categorized as certainly induced abortions were given hospital diagnosis other than induced abortion (Tab. III).

The current study showed that elder age (≥ 30 ys), having more than 2 children, and Alexandria hospital (C) were independent predictors of induced abortions (Tab. IV). Huntington and his colleagues, in their previous study in Egypt concluded a similar finding regarding age relation to the induced abortions where induced abortions had higher mean age than cases with spontaneous abortions [8]. Other studies reported younger age as a risk factor for induced abortions [13] but this may be interpreted by the difference in sexual behavior in the different countries. In some countries where sexual behavior before marriage at younger age is common, un-

Tab. III. Profile of the reported (certainly) induced abortions.

	No. (%) n = 9
Method used	
Self induced with medication	1 (11.1)
Self induced with unspecified method	4 (44.4)
Midwife	4 (44.4)
Reason of hospitalization	
Bleeding	7 (77.8)
Non-specific	2 (22.2)
Hospital Diagnosis	
Threatened abortion	2 (22.2)
Incomplete abortion	6 (66.7)
Septic abortion	1 (11.1)
Hospital management	
D&C/ suction &evacuation	7 (77.8)
Medical management	2 (22.2)

wanted pregnancies may be common and hence induced abortions may be prominent at younger age. In contrast, where sexual behavior before marriage is not common, as in our country, unwanted pregnancies may be linked to failure or underutilization of contraceptive methods which occur later in the marriage history.

As shown in Table IV, number of children (more than 2) was identified as an independent risk factor for induced abortion. Higher number of children can be regarded as determinant of unwanted future pregnancy that in turn is linked to induced abortion. In Egypt, More than half of women in reproductive age group want to limit their family size to only two children [15]. This agrees with many studies that observed higher risk of induced abortions in presence of more children in the family [12, 16, 17].

The current study revealed an interesting finding, where classified induced abortions were significantly more frequent in Hospital C than the other two hospitals. All three hospitals have the same scope and level of healthcare service. Yet, Hospital C is located in different city with probably different referred population. Thus, Hospital C was regarded as proxy for the residence. Induced abortions have shown relation to geographic variation within the same country [18, 19]. This can be explained by socio-cultural disparities within same country that have impact on sexual practices as well perception of fertility.

The current study highlighted the potential burden of induced abortion; a masked health problem in our country; and its possible determinants. The study identified some predictable determinants like elder age and

Tab. IV. Factors related to induced abortions.

	Induced abortions No. (%)	Spontaneous abortions No. (%)	OR (95% CI)[*]
Hospital			
A	21 (13.3)	130 (36.2)	1
B	39 (24.7)	166 (46.2)	1.5 (0.8-2.9)
C	98 (62)	63 (17.5)	11.1 (5.8-21)
Working women	27 (17.1)	50 (13.9)	1.3 (0.8-2.1)
Age ≥30	92 (60.1)	108 (30.9)	2.3 (1.4-3.7)
No. children > 2	85 (53.8)	56 (15.6)	4.6 (2.8 7.7)

[*] Using logistic regression.

high number of children in the family, yet it pointed a possible importance of geographical variation of such practice within Egypt. This would call for researches that study such geographical distribution of induced abortions.

LIMITATION OF THE STUDY

This study was conducted on cases of abortion admitted to tertiary hospitals and the method of collection of data was record review. Data extracted from record review are limited to those provided in the record. Accordingly important potential risk factors like education, income and other social factors were missed from such study as they were not included in the medical record. Study of induced abortion in a country like Egypt represents a challenge as subjects will often deny such practice, making interviewing of subjects difficult and threaten validity and reliability of the tool.

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