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Relationship between Abortion Rates and Ethnicity

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Abstract

This research paper will serve as the first study in analysing discrepancies in birth rates among women of different ethnic groups in Singapore. The objective of this study is to root out any inequalities and effectively promote access to better healthcare for all women in Singapore. Additionally, a quantitative study in the form of a survey is proposed in this paper to collect original data. This survey will be disseminated in abortion clinics following the principles of cluster sampling. A regression analysis will be conducted to identify the statistical significance and correlation of each independent variables including age, income level, relationship status, education level, and religion to better understand their effects on abortion.

Keywords: abortion, ethnicity, singapore

Relationship between Abortion Rates and Ethnicity

The abortion rate in the United States (US) has reached an all-time low. Statistically, all the main measures of abortion have declined such as the number of abortions and the abortion ratio (Nash, 2019). However, disparities in abortion rates between different groups of race and ethnicity are still evident and well documented. Particularly, women of colour have substantially higher abortion rates than White women. In 2018, it was documented that birth rates for Black and Hispanic teens were more than twice as high as births to White teens (Martin, 2018). Higher birth rates in adolescent teens potentially lead to more abortions as well. There are many factors that may influence a woman in getting an abortion such as age-group, income levels, religion, and relationship status amongst many others. Furthermore, the distance between an individual's home and an abortion clinic has adverse impacts on abortion rates as well.

Currently, there is a lack of abortion data and research done in Singapore. One may compare it to the US which has a diverse population as well that encapsulates a variety of cultures, ethnicities, and religions. Social and financial inequality is present regardless of countries, and the studies conducted in the US can easily be relevant in Singapore's context as well. By utilizing past studies conducted in the US, we could promote better equality amongst Singapore's female population in terms of access to better healthcare. It is important that effort should be put to address the primary causes of these disparities in abortion, as well as to reduce their negative effects. This can be done through a better comprehension of the characteristics of abortion patients. Through our studies, we hope to be able to improve women's health outcomes as well as their ability to make decisions about their reproductive health and life trajectories.

Literature review

In most developed economies, abortion laws were liberalized between 1950 and 1985 on human rights and health premise (Finer & Fine, 2013). Abortion is permitted at the request of the women as stated by the most liberal abortion laws. Past research and studies on abortion have associated the characteristics of women obtaining abortions to specific age-groups, income levels, relationship status, and ethnicities. In a study by Jatlaoui et al. (2019), data indicates that the proportion of unintended pregnancies in the US had decreased from 51% in 2008 to 45% during 2011 to 2013 (Jatlaoui et al., 2019). Although there is a decrease in unwanted pregnancies, there is still a significant percentage of women who go through abortions each year. Thus, this research shall attempt to determine the root cause of women's choice to go through an abortion.

Age-Group

The Centers for Disease Control and Prevention (CDC) has been administering abortion surveillance since 1969 to record the characteristics and number of women in the US obtaining legally induced abortions. Jatlaoui et al. (2019) show that study in 2016 forty-eight states excluding California, Washington, Maryland, and New Hampshire reported to CDC on their overall abortion numbers, rates, and ratios. A total of 623,471 abortions were recorded in the data gathered. According to Jatlaoui et al., the abortion rate was 11.6 abortions per 1,000 women aged from fifteen to forty-four years and the abortion ratio was 186 abortions per 1,000 live births. Additionally, the Guttmacher Institute organized a survey from April 2014 to June 2015 and gathered data from 8,380 respondents getting abortions at 87 facilities in the US. Through the survey, it shows that the greatest proportion of abortion patients were in their 20s with 60.1% and subsequently those in their 30s with 25% (Jerman et al., 2016).

Income Levels

Abortion and unintended pregnancies are heavily concentrated among poorer patients and have been increasingly so over the past few decades. Jerman et al. (2016) found that out of the 623,471 abortions recorded through their survey in 2014, 49% of US women who went through an abortion had family incomes lesser than 100% of the federal poverty level. In addition, 26% of abortion patients in the same year had incomes that were 100 to 199% of the poverty level. From the data of their study, it reflects that the abortion rate was generally lower in the higher income group. It could be due to factors such as cost as women in this threshold are likely to have the means to raise a child and support their family.

Relationship Status

Out of the forty-eight states that reported data to the CDC in 2016, only forty-two states reported the marital status of their abortion patients (Jatlaoui et al., 2019). The data indicated that 14.1% of the patients were unmarried while the remaining 85.9% of them were married. The ratio of abortion was 380 abortions per 1,000 live births for unmarried women and 41 abortions per 1,000 live births for married women (Jatlaoui et al., 2019). Comparing this information to previous data, the percentage of unmarried women obtaining abortion from 2007 to 2016 had increased by 3%. During the same period, the abortion ratio for married women had decreased by 13%. Meanwhile, the study conducted by Guttmacher in 2014 finds that among their 8,380 respondents, 14.3% of the abortion patients were married, 31% were cohabiting but unmarried, and 45.9% were unmarried (Jerman et al., 2016). The studies show that unmarried women who impregnated themselves were likely to obtain an abortion.

Education level

Among first-trimester abortion patients, early recognition of pregnancy and having a college degree substantially boosted the possibility of getting an early abortion. As for second-trimester abortion, the characteristics that raised its likelihood include a late recognition of pregnancy and having less than a high school degree (Jones & Jerman, 2017). Data for these analyses came from the Guttmacher Institute's 2014 Abortion Patient Survey as mentioned above. Their first dependent variable evaluates if women were procuring an advanced abortion, established as six weeks gestation or earlier. In this case, access to abortion during the first trimester is particularly important in our research, as it is more common and accounts for most of the abortion rates.

In 2014, an estimated 24% of all abortion patients were presently attending school. This covered 72% of the minors and 53% of eighteen to nineteen-year olds. An estimated total of 66% of these patients had a form of a college degree, which suggests most abortion patients who were students were pursuing postsecondary degrees (Jerman et al., 2016). According to the results, as education increased, the proportion of abortions that were second-trimester abortions decreased. In summary, women with higher education levels and health literacy were more inclined to recognize a pregnancy sooner and obtain an abortion therefore accounting for most of the abortions.

Ethnicity

According to the Guttmacher study on abortion in 2014, there was not a specific ethnic group that dominated the number of abortion patients (Jones & Jerman, 2017). The study which was conducted in the US presented that 39% of the patients were white, 28% were black, 25% were Hispanic, 6% were Asian or Pacific Islander, and the remaining 3% were from other

backgrounds. The CDC had also collected data for the abortion rate concerning the ethnicity of the abortion patient in the US. The abortion rate is presented as the number of abortions attained by women in each ethnicity per 1,000 women in the same ethnic group. The CDC study finds that there was a decrease in the abortion rate from 2012 to 2016 in the three largest ethnic groups. The abortion rate of white women reduced from 7.7 to 6.3, black women from 30.2 to 26.2, and Hispanic women from 15.6 to 11.8 (Jatlaoui et al., 2019).

Religious Affiliation

Most abortion patients had a religious affiliation. In the Guttmacher 2014 study, 24% were Catholic, 17% were mainline Protestant, 13% were evangelical Protestant and 8% were classified under others (Jerman & Onda, 2016). The remaining 38% had no religious affiliation. Despite religiously affiliated women in the US being in disapproval of abortions, an estimated 60% of the over 900,000 women who obtained an abortion in 2014 identified with a religious affiliation (Frohworth et al., 2018). Therefore, it does not appear that there is a significant disparity between the abortion-related behaviour of women who are religiously affiliated versus non-religiously affiliated women. Additionally, studies have agreed that religion plays an unresolved and context-specific role in women's decision of obtaining an abortion. Concerns relating to religiously informed abortion stigma are often considered when researching religion and abortion.

Limitations

First, many individuals who successfully ended their pregnancies on their own were not captured in the survey. Therefore, increasing or decreasing trends in individuals who used misoprostol and other substances cannot be readily captured. Second, the studies conducted were unable to identify how many individuals were prevented from acquiring abortions due to

economic or other barriers. Therefore, this may necessarily underestimate the current proportion of poor patients that constitute the abortion patient's database. Third, a non-negligible proportion of patients identified their sexuality as something else which has yet to be properly measured. This field of information regarding sexual orientation has yet to be properly researched although it can be used to understand the relationship between unintended pregnancy among sexual minority women.

Summary of Findings

Most of the past research conducted have uniformly concluded that most abortion patients were in their 20s, in a lower income group, unmarried, religiously affiliated, black, or Hispanic. When it came to education levels, it was an interesting find. The findings were that women with more higher education levels and health literacy were more likely to acquire an abortion. This signified that teens who were going after their postsecondary degrees were more likely to abort than teens who were not pursuing their studies. Coupled with data findings that suggest that birth rates for black and Hispanic teens were more than twice as high as births to white teens, it can be inferred that teens of colour had a proportionally higher abortion rate. Furthermore, past studies have concluded that teens of colour have higher unintended pregnancy rates.

We can infer from the characteristics and statistics of abortion patients that a form of structural inequality exists. This can be in the form of access to better reproductive health care and services. Furthermore, it can be identified that some ethnic groups are significantly overrepresented amongst abortion patients such as Hispanics and blacks. This finding can be particularly important to Singapore as it is home to a variety of ethnicities and cultures. By

conducting our study in Singapore, we could potentially address any disparities or inequalities that may exist within Singapore.

Research question

In our research, we are aiming to unravel the disparities in abortion rates between ethnicities. Being that both the USA and Singapore are ethnically diverse countries, we will be going with the assumption that disparities in terms of abortion rates amongst different ethnic groups would most likely be present in Singapore as well. Despite many other potential independent factors or control factors that may influence women's decision in terminating their pregnancy, our research question will be primarily focused on ethnicity.

Theoretical framework

The dependent variable used in our study would be the number of times the subject had an abortion. This will be the variable that depends on the other factors mentioned later. Next, our key independent variable will be the ethnicity of the individual. In our study, we will be testing and manipulating this key variable to understand how it causes changes to our dependent variable.

Additionally, we must consider the control variables such as age, income level, relationship status, education level, and religion. These control variables are not necessarily primary interests but are considered as third factors whose influence could be controlled or removed.

Ethnicity and race are complex terms that are often used comparably. In the US, the Standards for the Classification of Federal Data on Race and Ethnicity is used for federal data collection purposes. This standard contains five categories for the race which are, American Indian Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, and White. In addition, there are two categories for ethnicity, "Hispanic or Latino" and

“Not Hispanic or Latino” (Evans, 2015). On the other hand, Singapore’s race and ethnic composition are made up of Chinese, Malays, Indians, and others. In June 2018, the latest records depicted that the resident population consisted of 74.3% Chinese, 13.4% Malays, 9% Indians with the remaining under Others (Singstat, 2018).

The measurements of our variables will be done through surveys. Due to the sensitivity of data we need to obtain, it would not be feasible to collect input from all abortion patients in Singapore. Hence, the survey would be conducted in ten different abortion clinics and be distributed equally among the five regions in Singapore. As this research is the first of its kind in Singapore, the cluster sampling technique will be used to obtain a larger sample size and have more survey respondents.

Hypotheses

Based on our research topic, we have crafted the following hypotheses. The null hypothesis for our research is that there is no significant relationship in one’s ethnicity in getting an abortion. The alternative hypothesis that we will be attempting to prove, is that there is a significant relationship in one’s ethnicity in getting an abortion.

H₀: There is no significant relationship in one’s ethnicity in getting an abortion.

H_a: There is a significant relationship in one’s ethnicity in getting an abortion.

Research Methodology and Analysis

Study Design

In our study, we aim to understand the reason for disparities in abortion rates between different ethnic groups in Singapore. Furthermore, this specific study has not been conducted in Singapore and may serve as a contribution to existing literature and research. The null hypothesis for our research is that there is no significant relationship in one’s ethnicity in getting an

abortion. Therefore, our alternate hypothesis is that there is a significant relationship in one's ethnicity in getting an abortion. For our research, we will be conducting a quantitative study through a survey as our data collection tool. We will use the cluster sampling technique whereby the population of our study are divided into clusters or mini representations of the population. Our survey will consist of questions to collect the subject's ethnicity, age, education level, income level and religion amongst others. Furthermore, the survey will seek to record the total number of times the subject underwent an abortion.

Ideally, the recording of the successful abortions would cover abortions that were officially recorded and conducted, and self-induced abortions that were non-officially disclosed. This would give us a more accurate representation of the abortion rates, although it must be understood that not all participants might be willing to share this information. Due to the multitude of dependent, independent and control variables, we will be utilising linear regression analysis to analyse and understand the relationship between the dependent variable and independent variable in the dataset.

Population sample

The population group for this study is females obtaining or considering abortions in Singapore. The populations can be divided into three groups: females obtaining their first abortion, females obtaining their subsequent abortion, and females who went to the abortion clinics but decided against obtaining an abortion. Our sample will be collected from females visiting the abortion clinics. We intend to investigate if ethnicity is a major factor in women's decisions to obtain abortion by examining if women from particular ethnic groups are more likely to proceed with abortion. Examining the three different groups would enable us to collect data from a larger sample size, especially since the survey is of a sensitive nature.

Variable and measures

There are several variables that will be presented throughout the research study. Our dependent variable will be number the of times the subject has underwent an abortion. In our survey, the question will be framed in an open-ended question to record the times of abortion obtained. For example, "How many abortions have you had before?". Our key independent variable would be the ethnicity of the respondent. This demographic question will be presented as a checklist question that covers all the different ethnicities. The respondent would check their corresponding ethnicity that they fall under. The relationship between the ethnicity and the number of abortions obtained is the primary focus of our study in finding out, which and why certain ethnic groups experience higher (or lower) abortion rates than the others. Additionally, our control variables consist of the respondents' age, income level, relationship status, religion, and education level. The effects of these variables on abortion rates are not our primary interests but are included in the study as the third factors to control for influences they may have on the decision to obtain abortion.

The age of the subject matters because a significant proportion of abortion patients tend to range in their 20s and 30s. This would be recorded through an open-ended question instead of offering them a range to choose from, to get a more accurate result. Additionally, the higher the income level the less likely a woman would obtain an abortion. This is due to the financial security of being able to raise a child and support their family. The survey would prompt them to choose from different ranges of income such as \$1-9999, \$10000-\$14999 and so on. The reason for doing so, is that income survey questions are sensitive in nature and therefore the question will be structured to be more generic.

The relationship status matters as a significant majority of abortion patients are unmarried. This demographic question would be in the form of a multiple-choice question. Furthermore, an individual's religious affiliation has influence on their choice to get an abortion. Based on past research conducted, women with a religious affiliation were more likely to obtain an abortion than non-religiously affiliated women. This demographic question would be in the form of a multiple-choice question as well. Next, possessing a college degree significantly increased the chances of women in obtaining an early abortion. This demographic question will be expressed as a multiple-choice question and measure the highest level of education they have completed.

Data Collection Methods

As studies on the abortion rates have not been conducted in Singapore, we will not be using external descriptive statistics. Instead, quantitative data will be gathered through the distribution of surveys in the abortion clinics. By distributing the surveys to clinics, it ensures that the women participate willingly in the survey because they are able to reject doing it. As there are multiple abortion clinics in Singapore, we are targeting two clinics from each of the five regions in Singapore. The expected duration of the study is one year with a targeted number of 1,000 respondents. The duration would enable us to obtain a larger sample size which thus aids in producing better and precise results for the study. Besides ethnicity, the factors that will be recorded through the survey includes the females' age, income level, relationship status, religion, and education level so as to understand the main cause for disparities. A copy of the survey can be found in Appendix A.

Data Analysis Method

There are multiple ways to analyse the quantitative data that we will be gathering from the abortion clinics and they include correlation coefficient, Chi-Square test and linear regression analysis. After considering the following methods, the most appropriate quantitative method that we have decided to utilize to address our study is the linear regression analysis method. This method enables us to identify the effects of each independent variables on abortion. However, prior to conducting the linear regression analysis, the correlation coefficient can be conducted to determine and understand the strength of the relationships between the multiple variables. Also, the Chi-square test can be conducted after collating the quantitative data to determine if the results from the survey are statistically different from our expectations.

For the linear regression analysis, we will particularly be using the multilinear regression analysis. The multilinear regression analysis would analyse the relationship between the dependant variable which is the number of times the female has undergone an abortion and the other independent variables which are the ethnicity, age, income level, relation status, education level, and religion of the females. The formula that we derive after combining the variable is as follow:

$$Y = \alpha + \beta_1 \text{Ethnicity} + \beta_2 \text{Age} + \beta_3 \text{Income} + \beta_4 \text{Relationship} + \beta_5 \text{Education} + \beta_6 \text{Religion} + \epsilon$$

Y in the equation represents the number of times the female has underwent an abortion. β_x represents the coefficients for the independent variables while ϵ represents the error term.

After retrieving the results using the equation, we will be zoning into three areas which are the P-value, coefficients, and R-squared value. The P-value provides us with the statistical significance. If the P-value is lower than 0.05, it would show that our results are statistically significant at 5% and that the null hypothesis that there is no significant relationship in one's ethnicity in getting an abortion can be rejected because ethnicity has an impact on abortion.

Next, the coefficient which is represented by β_x indicates the impact of the independent variables. For instance, if the coefficient is positive, this means that if the females' ethnicity and the other factors included as independent variables increases, it is more likely that the female would obtain an abortion.

Conclusion

This research will aid us in determining if ethnicity is the major factor for females obtaining abortion. The results of the findings will enable us to provide evidence to support our hypotheses that there is a relationship in one's ethnicity in getting an abortion. The results would allow us to identify the portion of females from the various ethnicities to come up with possible solutions regarding their ethnicities to attempt to lower the abortion rates in Singapore.

Data on abortion in Singapore is not readily available, thus we would recommend the government to publish such data on data.gov.sg which is Singapore government's one-stop portal to publicly available datasets. Having this information available online would assist in facilitation if there is a need for additional public education on pregnancy, abortion, and better healthcare for all women in Singapore.

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Survey Questions

Appendix A

Cover letter

Dear Participant,

Thank you for showing your interest in taking this important survey. The purpose of this survey is to ask abortion patients across the country to provide us with information to enhance health policies and programs in Singapore. We are a pair of students currently enrolled in the Bachelor of Science in Aviation Business Administration program in Embry-Riddle Aeronautical University Asia. Furthermore, we seek your help in answering the below questions about yourself and other details about your life. The survey contains demographic questions as well to understand your background. This survey contains questions about sensitive topics such as abortion which might make you feel uncomfortable.

Your participation is voluntary, and you may choose to skip questions that you are unable to answer. Your name is not required, and this survey will be treated with full confidentiality. The information that you provide will be used solely for research purposes and not shared with any third parties. Should you agree to take part in this survey, it should take less than 5 minutes to complete.

We thank you for your assistance.

Yours sincerely,

Ronald and Diyanah

Appendix B**Survey Questions**

1. What is your age? ____

2. Please choose the ethnicity that you consider yourself to be:
 - Chinese

 - Malay

 - Indian

 - Others (Specify): _____

3. Please indicate your religion, if any:
 - Buddhist

 - Taoist

 - Muslim

 - Hindu

 - Catholic

- Protestant
- None
- Others (Specify): _____

4. What is your current marital status?

- Married
- Divorced
- Widowed
- Separated
- Never married

5. What is your highest level of education?

- No formal education
- Primary-Secondary school
- Vocational education (e.g. ITE)
- Tertiary education (e.g. Polytechnic, Junior college)

- University
- Others (Specify): _____

6. What is your total annual income level?

- Less than \$9,999
- \$10,000 to \$19,999
- \$20,000 to \$29,999
- \$30,000 to \$39,999
- \$40,000 to \$49,999
- \$50,000 to \$59,999
- \$60,000 to \$69,999
- \$70,000 to \$79,999
- \$80,000 to \$90,000
- \$100,000 or more

7. Is this your first abortion? (If your answer is 'No', please proceed to the following questions)

Yes

No

8. How many abortions have you had before? ____

9. Where was your previous abortion/s done at?

Public hospitals/clinics

Private hospitals/clinics

Self-induced

Others: _____