Prevalence and predictors of contraceptives use among women age (15-49) with induced abortion history in Ghana

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Abstract

Background Abortion incidence in Ghana ranges from 27 per 1000 to 61 per 1000 women, causing major gynecological complications or problems and maternal mortality. Though, the use of modern contraceptives has been documented to be a reliable public health preventive measure towards reducing unwanted pregnancies, only 19% of women aged (15-49) with abortion history receive post-abortion contraception support. This study therefore aimed at determining the proportion and identifying predictors of contraceptives use in these underreported and vulnerable population.

Methods This study used secondary data from the 2017 Ghana Maternal Health Survey (GMHS) for the analysis. The analysis is on a weighted sample of 3,039 women aged (15-49 years) with history of induced abortion. Both descriptive and inferential methods were employed. Chi- Square test, univariate and multivariate logistic regression techniques were used to assess statistical associations between the outcome variable and the predictors. Statistical significance was set at 95% confidence interval and p-values <0.05.

Results Out of the 3039 participants, 37% (95% CI: 34.6, 38.84) used contraceptives. We identified women age, union, place of residence, knowledge of fertile period, total pregnancy outcomes, and region as strong significant (95% CI p<0.005) predictors of post induced abortion contraceptives use.

Conclusion Contraceptives use among this vulnerable population is low. Therefore, there is the need to provide widespread access to post-abortion contraception services and enhance efforts to efficiently integrate the safe abortion practices law into health services in Ghana.

Introduction

Globally, the proportion of unsafe abortions in developing countries is 49.5% (Ganatra et al., 2017). Unsafe abortion accounts for 62% of deaths in Africa and 520 deaths per 100,000 in Sub-Saharan Africa (SSA) (Ganatra et al., 2017). In Ghana, 20% of women in reproductive age (15-49) have experienced induced abortion during their life time (ICF, Ghana Health Service (GHS), 2018). Incidences of abortion in Ghana range from 27 per 1000 to 61 per 1000 women (Keogh et al., 2020). Major admissions to gynecological wards and maternal mortality can be attributed to induced abortions in Ghana (Rominski & Lori, 2014).

Despite the 1985 Ghanaian law accommodating safe abortion practice on certain medico-social grounds, there has been observed delays in the formulation and implementation of policies to integrate the law into health services (Morhee & Morhee, 2010). Factors such as lack or insufficient knowledge on safe abortion, stigma related to unintended pregnancy, religious beliefs, and implicit nature of the abortion law have significantly influenced safe abortion practice negatively in Ghana (Atakro et al., 2019; Morhee & Morhee, 2010).

These challenges associated with the delays in the implementation of comprehensive abortion care in Ghana make the use of modern contraceptives imperative and a reliable option towards reducing the high rates of unwanted pregnancies (Amalba, Mogre, Appiah, & Mumuni, 2014; Apanga & Adam, 2015; Geelhoed, Nayembil, Asare, Van Leeuwen, & Van Roosmalen, 2002), induced abortions (Geelhoed et al., 2002), maternal deaths (Ahmed, Li, Liu, & Tsui, 2012) and Sexually Transmitted Infections (STIs)(Apanga & Adam, 2015).

The use of modern contraceptives and its associated factors among women age (15-49) have been documented in Ghana (Agyemang, Newton, Nkrumah, Tsoka-Gwegweni, & Cumber, 2019; Aviisah et al., 2018; Geelhoed et al., 2002; Grindlay et al., 2018; Kebede, Abaya, Merdassa, & Bekuma, 2019; Nonvignon & Novignon, 2014; Nyarko, 2020). However, utilization of modern contraceptives specifically among women with induced abortion history is underreported despite their vulnerability. Relatedly, only 19% of women aged (15-49years) with history of induced abortion receive contraception support in Ghana (ICF, Ghana Health Service (GHS), 2018). In addition, several studies reported in Ghana and elsewhere have highlighted varying proportions and predictors of contraceptives use among women with induced abortion history (Lamina, 2015; Makenzius et al., 2018; Mekuria, Gutema, Wondiye, & Abera, 2019; Opoku, 2012).

This study therefore used a nationally representative survey (Ghana Maternal Health Survey, 2017) to report the national proportion and identify factors which significantly influence the use of modern contraceptives among this age group of women (15-49) with induced abortion history. This will provide valuable information for policy makers and implementers to make informed and evidence-based decisions regarding policy formulation and implementation on reproductive health policies and programs.

Materials And Methods

2.1 Study design and Data source

This study used a secondary data from the 2017 Ghana Maternal Health Survey (GMHS) for the analysis. The Ghana Maternal Health Survey is a nationally representative special Demographic and Health Survey (DHS) that collects data pertaining to women, children, birth, household and other feminine variables covering all regions and districts of the country. The survey has been conducted twice in Ghana in a decade in 2007 and 2017.

2.2 Sampling Approach and Study Population

The 2017 GMHS sample was stratified and selected from the sampling frame in two stages. Each region was separated into urban and rural areas; this yielded 20 sampling strata. Samples of Enumeration Areas (EAs) were selected independently in each stratum in two stages. Implicit stratification and proportional allocation were achieved at each of the lower administrative levels by sorting the sampling frame within

each sampling stratum before the sample selection, according to administrative units at different levels, and by using a probability proportional to size selection at the first stage of sampling.

In the first stage, 900 EAs (466 EAs in urban areas and 434 EAs in rural areas) were selected with probability proportional to EA size and with independent selection in each sampling stratum. A household listing operation was implemented from 25 January to 9 April 2017 in all of the selected EAs. The resulting lists of households then served as a sampling frame for the selection of households in the second stage. The household listing operation included inquiring of each household if there had been any deaths in that household since January 2012 and, if so, the name, sex, and age at time of death of the deceased person(s). Some of the selected EAs were very large. To minimise the task of household listing, each large EA selected for the 2017 GMHS was segmented. Only one segment was selected for the survey with probability proportional to segment size. Household listing was conducted only in the selected segment. Thus, in the GMHS, a cluster is either an EA or a segment of an EA. In order to get statistics that are representative of Ghana, the distribution of the women in the sample was weighted (or mathematically adjusted) such that it resembles the true distribution in the country. Therefore, a calculated "weight" by DHS was used to adjust the number of women from each region so that each region's contribution to the total is proportional to the actual population of the region (ICF, Ghana Health Service (GHS), 2018)

For the current GMHHS 2017, a total of 27,001 households were selected for the sample, of which 26,500 were occupied at the time of fieldwork. Of the occupied households, 26,324 were successfully interviewed, yielding a response rate of 99%. In the interviewed households, 25,304 eligible women were identified for individual interviews; interviews were completed with 25,062 women, yielding a response rate of 99%.

In this present study, our analysis is on a weighted sample of 3,039 women aged (15-49 years) out of the 25,062 reproductive age women data analyzed in the 2017 GMHS.

2.3 Inclusion criteria

The inclusion criteria involved women in their reproductive ages between (15-49years), who responded "Yes" to this question asked during the GMHS 2017 "Have you ever been in a situation when you or someone else have had to do something to end your pregnancy?"

2.4 Exclusion criteria

The exclusion criteria were those who met the inclusion criteria above but had incomplete information (missing data).

2.5 Outcome variable

The outcome variable of interest is current usage of contraceptives. Participants were asked the question "Are you or your partner currently doing something or using any method to delay or avoid getting pregnant?"; whose responses were coded as either "Yes" or "No".

2.6 Independent variables measures

We included several theoretical pertinent socio-demographic variables. Women age group [14-19, 20-24, 25- 29, 30-34,35-39, 40-44, 45-49], religious status[Christianity, Islam, Traditional and Others], Age at first Intercourse[<16, 16 or above], Health insurance[Yes or No], knowledge of fertility[Yes or No], current union[Yes or No], Region [Eastern, Greater Accra, Northern, Upper East, Upper West, Volta, Eastern, Central, Ashanti, Western, Brong Ahafo], Education [Primary, JHS, SHS or above, No education], Place of residence[Rural or Urban], Gravidae[1-3, 4-5, 6 or more]. Furthermore, variables were recoded where appropriate to produce a meaningful sample for the analysis.

2.7 Statistical Analysis

This analysis used both descriptive and inferential methods. Descriptive statistics used included frequencies and percentages. Chi-square tests, univariate and multivariable techniques were used to assess statistical associations between the outcome variable and the predictors.

In this approach, factors that were statistically significantly associated with the outcome, a chi-squared test of independence with the help of their confidence intervals (CI) and p-values less than or equal to 0.05 were used to retain and include the variables in a univariate logistic regression analysis. In the univariate analysis, variables with p-values of < 0.005 were simultaneously included in a multivariable logistic regression model. The odds ratio (OR) and adjusted odds ratio (AOR) with their 95% confidence intervals were estimated.

This statistical approach was implemented in STATA (Stata Statistical Software: Release 16. College Station, TX: StataCorp LP) software. The complex survey command "svy" was used to estimate means, proportions, and confidence intervals (CI). Our final model was checked using the "svylogitgof" command (Archer & Lemeshow, 2006). The results revealed no evidence of a lack of fit with our model in significantly predicting contraceptives use.

2.8 Ethics

The Ghana Health Service Institutional Review Board (IRB) approved the study protocol, survey instruments and materials prior to the commencement of the surveys. Individual consent was also obtained during the data collection process. Data was then used after approval was obtained. Furthermore, this study concept was presented to ICF for permission to use t the datasets in this study and approval was duly granted before its use. All terms of use have been observed.

Results

3.1 Descriptive Statistics

A total of 3039 women met the inclusion criteria for the study. The mean (standard deviation (SD) age in years of the women was 32.93(8.32). Almost 37% (95% CI: 34.6, 38.84) of the participants used contraceptives. The mean (SD) age in years of respondents using contraceptives was 33.11(8.09) respectively. Cumulatively, 73.43% of respondents had education above primary school level. Approximately, 67% of participants were in union (either married or cohabitating with a man). Majority of participants were Christians (91.16%) and 68.35% of participants living in urban areas. Greater Accra and Ashanti regions cumulatively constituted 51.1% of all participants (Table 1).

In Table 2, 25.81% of participants in union were contraceptives users, 13.84% and 22.86% of participants living in rural and urban areas used contraceptives respectively. Among the Christian participants, 33.71% of them use contraceptives and 11.69% of participants who had their first sexual intercourse below age 16 used contraceptives likewise 25% of participants who had their first sexual intercourse at age 16 or above used contraceptives. Furthermore, 30.53% participants registered with health insurance used contraceptives and 34% of participants among those who knew their fertile period used contraceptives respectively (Table 2).

3.2 Predictors of contraceptives use

Chi-Square tests revealed respondents current age (95%CI: X2= 106.8983 P = 0.0000), union (95% CI: 11.5593 P = 0.0042), educational level (95% CI: 17.6039 P = 0.0076), residence (95% CI: 29.8850 P = 0.0000), knowledge of fertile period (95% CI: 14.7421 P = 0.0007), and gravidae(95% CI: 18.8832 P = 0.0015) to be significantly associated with contraceptives use (Table 3).

A univariate and multivariate logistic regression was used to further identify significant predictors of contraceptives use (Table 3). At the univariate level, women age 30-34(OR = 0.61 95% CI:(0.38- 0.98), p=0.043), 35-39 (OR = 0.51 95% CI:(0.31- 0.83), p=0.008), 40-44 (OR = 0.37 95% CI:(0.22- 0.62), p=0.000), 45-49 (OR = 0.30 95% CI:(0.18- 0.48), p=0.000) were significantly less likely to use contraceptives compared with women age 15-19 (Table 3). Participants in union were 1.32(CI:(1.09- 1.59), p=0.004) times significantly more likely to use contraceptives than those not in union. Also, participants from Ashanti (OR = 1.82 95% CI:(1.21- 2.74, p=0.004), Northern (OR = 2.20 95% CI:(1.19- 4.08, p=0.012), Brong Ahafo (OR = 2.06 95% CI:(1.28- 3.31, p=0.003), and Eastern (OR = 2.27, 95% CI:(1.47- 3.49, p=0.000) regions were more likely users of contraceptives compared to participants from Central region(Table 3).

Also, the probability of using contraceptives among participants with SHS level of education was 0.74 (95% CI:(0.55- 0.99, p=0.043) times less likely compared to those with only primary level of education. Rural dwellers were 1.55 (95% CI:(1.26- 1.90, p=0.000) times more likely users of contraceptives compared with urban dwellers. Women who had their total pregnancy outcomes between 4-5 were 0.68 (95% CI:(0.55- 0.84, p=0.000) times less likely to use contraceptives compared with women with 1-3 total pregnancy outcomes (Table 3). Furthermore, women who knew their fertile period were 1.63 (95% CI: (0.38- 0.98, p=0.020) times more likely to use contraceptives than those who do not know. At the

multivariate level, age of respondents, union, region, residence, gravidae and knowledge of fertile period remained significant predictors whilst educational level became insignificant predictor after controlling for other predictive factors (Table 3).

Discussions

This study was carried out to estimate the proportion and identify predictors of contraceptives use among women with induced abortion history. We estimated 36.69% (95% CI: 34.6, 38.84) contraceptives use in this population. The estimated proportion is lower compared to similar studies carried out by (Makenzius et al., 2018; Mekuria et al., 2019; Opoku, 2012). However, a study carried out in Western Nigeria showed a much lower proportion of contraceptives use (Lamina, 2015). The differences in proportions observed may be attributed to the differences in medical counselling and guidance services received on contraception after abortion episodes, as women tend to take up contraception when counselled properly after any abortion episode (Ceylan, Ertem, Saka, & Akdeniz, 2009).

The findings also revealed that older women age (30-34, 35-39, 40-44, 45-49) are less likely to use contraceptives relative to younger ones(15-19years), this corroborates a study conducted by (Abebe, Wudu Kassaw, & Estifanos Shewangashaw, 2019). However, our finding is contrary to studies carried out by (Maxwell, Voetagbe, Paul, & Mark, 2015; Mekuria et al., 2019). Adolescents have been identified as high sexually active group, so many health advocacy programs in Ghana especially those on contraception have focused on them, so this might be responsible for the observed contraceptives use differences identified across the various age groups. However, women aged (20–29) have been reported to have the highest proportion of abortions in most countries, (Chae, Desai, Crowell, Sedgh, & Singh, 2017). There is the need for strategies to increase contraception uptake through counselling among older women, improve access to post-abortion services, and enhance health service provider training and supervision on post-abortion contraception (Makenzius et al., 2018). Also, stigma by health service providers affects women contraception uptake after induced abortion and needs to addressed as well (Håkansson, Oguttu, Gemzell-Danielsson, & Makenzius, 2018).

This study finding also observed that participants in union(married or cohabitating) have higher chances of using contraceptives than those not in union, which is similar to other studies carried out by (Asrat, Bekele, & Rominski, 2018; EK & M, 2016; Kokeb, 2015; Makenzius et al., 2018; Postlethwaite, Lee, Merchant, Alabaster, & Raine-Bennett, 2018). Other studies have also observed contraceptives use among married women when they have more than seven deliveries and birth interval less than 24 months between two children (Gonie, Wudneh, Nigatu, & Dendir, 2018). In addition, male involvement in family planning consultation increase their responsibility for contraception (Gonie et al., 2018).

Women living in rural areas had higher chances of contraception than those in urban areas. However, rural women access to maternal and child health services are lowest compared to those in urban areas (Buor, 2004). In addition, effective post-abortion care services are mostly inadequate in villages (Johnston, Ved, Lyall, & Agarwal, 2003). Nonetheless, urban women contraception use is low and a

significant proportion of them also experience reproductive ill health (Adanu, Seffah, Anarfi, Lince, & Blanchard, 2012) but generally, contraception uptake among rural women in Ghana relative to urban women is on the increase (Aviisah et al., 2018; Nonvignon & Novignon, 2014). Furthermore, our study revealed that women who know their fertile period are more likely to use contraceptives than those who do not know. This may be attributed to the higher conception chances during this window, however a study conducted in Nigeria among adolescents has pointed out that not all women restrict intercourse to their safe periods of their cycle (Amazigo et al., 2020). Moreover, there might be other factors which influence unsafe sex practice during this period, which can be exploited further.

While acknowledging all the importance of all these predictors highlighted, there is the need for broader methods to satisfy clients varieties and differences regarding contraception (Samuel, Fetters, & Desta, 2016), effectively addressing the effects of social norms on post-abortion contraception, enhanced post-abortion counselling services, and encouraging multi-sectoral collaborations in post abortion related contraception programs formulation and implementation.

4.1 Strengths of the study

This study is from a nationally representative sample and makes room for generalizability of study findings across Ghana. Also, Demographic and Health Surveys (DHS) are planned properly and well executed hence the data is of high quality. Furthermore, observations with complete dataset meeting the study criteria was large.

4.2 Limitations of this study

Firstly, the data used for this study was obtained through a cross-sectional study design, hence preventing causations to be inferred. The survey (GMHS 2017) obtained information retrospectively which has a high recall bias since participants self-reported, which spanned 5-year period prior to the survey. Recall bias has immense effect on coefficient estimates and overall significant testing and so interpretations/use of the findings should be done cautiously. Finally, not all the factors that have a known association with contraceptives use within this population have been completely explored.

Conclusions

We explored the proportion of contraceptives use and its associated significant predictors among women aged (15-49) with history of induced abortion. The proportion was low at 37%. Women age, union, place of residence, knowledge of fertile period, gravidae, and region were identified as significant predictors of contraceptives use. We recommend that the Ministry of Health and Ghana Health Service facilitate widespread and easy access to modern contraceptives, provide post-abortion contraception services including guidance and counselling to women who need these services. In addition, we recommend efforts be enhanced in the formulation and implementation of policies by the government of Ghana to effectively and efficiently integrate the abortion law into services and lastly, we recommend that the

National Health Insurance Scheme (NHIS) should absorb contraception services as a way of curbing cost as a potential predictor of its uptake.

Declarations

Data Availability

The datasets generated and/or analyzed during the current study are available in the Ghana demographic and health repository, http://dhsprogram.com/data/available-datasets.cfm

Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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Authors' contributions

MGS conceptualized the present study. MGS led the data extraction and analysis and wrote the first draft of the manuscript. MGS and MK contributed in the write-up of the different sections of the manuscript. MK, MGS reviewed the draft manuscript and contributed to the final version of the manuscript. All authors read and approved the final manuscript before submission.

Ethics/Consent

The Ghana Health Service Institutional Review Board (IRB) and Committee of ORC MAcro Inc.approved Ghana Maternal Health Survey 2017 study protocol survey instruments and materials prior to the commencement of the surveys. Individual consent was also obtained during the data collection process. The current study was based on analysis of anonymised secondary data available in the public domain of Demographic Health Surveys(DHS) therefore no additional approval was necessary.is of anonymised secondary data available in the public domain of DHS therefore no additional approval was necessary.

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Tables

Table 1 Background characteristics of respondents (N=3039)

Variable	Frequency	Percentage
Age		
15- 19	115	3.516
20-24	446	14.45
25-29	629	20.85
30-34	576	18.74
35-39	515	17.36
40-44	399	13.54
45-49	359	11.53
Educational Level		
Primary	503	16.68
JHS	1222	41.29
SHS and above	1011	32.14
No Education	303	9.891
Religious Distribution		
Christianity	2751	92.16
Islam	244	6.276
Traditional	8	0.2365
Others	36	1.325
Contraceptives use		
Yes	1130	36.69
No	1909	63.31
Residence		
Rural	925	31.65
Urban	2114	68.35
Union		
Yes	2002	66.51
No	1037	33.49
Region		
Western	388	13
Central	248	8.125
Greater Accra	567	26.05
Volta	212	6.005
Eastern	364	10.62
Ashanti	644	25.05
Brong Ahafo	383	9.493
Northern	86	0.7622
Upper East	69	0.4839
Upper West	78	0.4042

Table 2 Distribution and chi-square analysis of outcome (contraceptives use) across respondents' characteristics (socio-demographic, socio-economic and abortion related characteristics)

Variable	Contraceptives Use	
	No (%)	Yes (%)
Age		
X2=106.8983 P = 0.0000		
15-19	1.801	1.715
20-24	7.379	7.074
25-29	11.59	9.258
30-34	11.87	6.871
35-39	11.66	5.703
40-44	10.03	3.519
45-49	8.977	2.556
Union		
X2=11.5593 P = 0.0042		
Yes	40.7	25.81
No	22.6	10.89
Educational level		
X=17.6039 P = 0.0076		
Primary	10.27	6.404
JHS	25.15	16.14
SHS	22.04	10.11
No Education	5.85	4.041
Religion		
X=0.8010 P = 0.8954		
Christianity	58.45	33.71
Islam	3.945	2.331
Traditional	0.1182	0.1183
Others	0.7913	0.5334
Residence		
X=29.8850 P = 0.0000		
Rural	17.82	13.84
Urban	45.49	22.86
Age at first intercourse		
X=0.6218 P = 0.5189		
<16	19.3	11.69
16+	44	25
Knowledge of fertile Period		
X=14.7421 P = 0.0007		
Yes	57.13	34.58
No	6.174	2.117
Registered with Health Insurance		
X=3.3315 P = 0.0858		
Yes	50.98	30.53
No	12.33	6.168
Total Pregnancy Outcomes		
X=18.8832 P = 0.0015		

1-3	24.69	16.39
4-5	20.61	9.26
6+	18	11.04

Table 3. Univariate and Multivariate Logistic analyses of predictors of contraceptives use among ever had induced abortion women (15-49).

Variable category	Univariate		Multivariate	
	OR [95% CI]	P-value	aOR [95% CI]	P-value
Socio-demographic				
Age of respondents				
15-19	1		1	
20-24	1.01(0.62-1.63)	0.979	0.97(0.60-1.57)	0.903
25-29	0.84(0.52 -1.35)	0.467	0.76(0.46-1.25)	0.279
30-34	0.61 (0.38-0.98)	0.043	0.50(0.30-0.85)	0.010
35-39	0.51(0.31 – 0.83)	0.008	0.35(0.20-0.62)	0.000
40 – 44	0.37(0.22-0.616)	0.000	0.25(0.14 -0.45)	0.000
45-49	0.30(0.18-0.48)	0.000	0.22(0.12-0.41)	0.000
Age at first intercourse				
<16	1			
16 or above	0.94(0.77-1.14)	0.519		
Union				
No	1		1	
Yes	1.32(1.09-1.59)	0.004	1.45(1.20-1.75)	0.000
Religious affiliation				
Christianity	1			
Islam	1.02(0.69 -1.52)	0.906		
Traditional	1.734(0.40-7.56)	0.463		
Others	1.17 (0.54 -2.53)	0.693		
Region				
Central	1		1	
Western	1.75 (1.12-2.75)	0.015	1.58(1.00-2.49)	0.049
Ashanti	1.820(1.21 -2.74)	0.004	1.87(1.25-2.80)	0.002
Northern	2.20(1.19-4.08)	0.012	1.98(1.05-3.72)	0.034
Brong Ahafo	2.06(1.28-3.31)	0.003	2.07(1.31 -3.26)	0.002

Upper West	1.06(0.53-2.13) 0.876	0.92(0.44 – 1.90) 0.819
Upper East	1.61(0.80-3.27) 0.184	1.50(0.72-3.13) 0.284
Greater Accra	1.12(0.72 – 1.73) 0.612	1.37(0.87-2.15) 0.175
Volta	1.52(0.93-2.48) 0.093	1.60(0.97-2.62)0.175
Eastern	2.27 (1.47-3.49) 0.000	2.32(1.50 – 3.60) 0.000
Socio-economic characteristics		
Educational Level		
Primary	1	1
JHS	1.03(0.80- 1.54) 0.821	0.87(0.66-1.14) 0.322
SHS or above	0.74(0.55-0.99) 0.043	0.79(0.56-1.11) 0.173
No Education	1.11(0.80-1.54) 0.542	1.04(0.73-1.48) 0.831
Place of Residence		
Urban	1	1
Rural	1.55(1.26-1.90) 0.000	1.31(1.04-1.65)0.022
Registered with Health Insurance		
Yes	1	
No	0.84(0.68-1.03) 0.086	
Abortion related characteristics		
Gravidae		
1-3	1	1
4-5	0.68(0.55-0.84)0.000	0.95(0.75-1.23) 0.733
6 or more	0.92(0.75-1.14)0.454	1.74(1.35-2.23) 0.000
Knowledge of fertile period		
No	1	1
Yes	1.63(1.08-2.46) 0.020	1.84(1.30-2.60) 0.001

Goodness of fittest.

F-adjusted test statistic = $F_{(9,680)} = 0.84$ Prob > F =   0.5748