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Editorial

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Human Trafficking – A Global Perspective

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Most people think that slavery ended with the signing of the Emancipation Proclamation…. not so! Human trafficking is a worldwide crime that ruthlessly exploits women and children into forced labor and sex. It is the modern form of slavery and a violation of human rights. It is the fastest growing criminal activity in the world, which generates over $150 billion annually, with >70% of the dollars spent are from the United States.[1] The hidden nature of this crime makes it a huge problem today, but one in which no one wants to think about or address. This topic is designed to raise your awareness, enrage you, and inspire you – enraged that human trafficking exists today as the fastest growing and most lucrative crimes, and to inspire you to reach out to help one of the most vulnerable populations trapped in slavery.

Human trafficking is a form of modern day slavery in which traffickers use force, fraud, and coercion to control victims for the purpose of engaging victims in commercial sex acts or labor services against his/her will. Sex trafficking has been found in a wide variety of venues within the sex industry, including residential brothels, escort services, fake massage parlors, strip clubs, and street prostitution. Labor trafficking has been found in diverse labor settings including domestic work, small businesses, large farms, and factories.

The International Labor Organization [ILO] estimates that there are 27 million victims of human trafficking globally, with hundreds of thousands in the United States. The victims of this crime in the United States are men, women, children, and foreign nationals. The Asia-Pacific region accounts for the largest number of forced laborers in the world, followed by Africa and Latin America.[2] It is hard to combat this problem because victims are often afraid to go to authorities for help.

Human trafficking is a market-driven criminal industry that is based on the principles of supply and demand, like drugs or fire arms trafficking. It does not exist solely because many people are vulnerable to exploitation, but instead it is fueled by a demand for cheap labor and for commercial sex. Human trafficking thrives for several reasons:

- Low risk – traffickers perceive there to be little risk or deterrence to affect their criminal operations due to lack of government and law enforcement training, low community awareness, ineffective laws, lack of law enforcement investigation, scarce resources for victim recovery, and social blaming of victims.
- High profits – When individuals are willing and able to pay for commercial sex and forced labor, they create a market and make it profitable for traffickers to sexually exploit children and adults in the sex trade and labor industry.[3]

Traffickers exploit others for the profit they gain from commercial sex and from forced labor. They lure people into forced labor and sex trafficking by manipulating and exploiting their vulnerabilities. The majority of victims are women and girls, though men and boys are also impacted. Traffickers prey on people who are hoping for a better life, lack job skills or opportunities, have unstable home lives, run away children, homelessness, or have a history of sexual or physical abuse.[4] Traffickers promise a high paying job, a loving relationship, or new and exciting opportunities and then use physical or psychological violence to control them.

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Traffickers can be lone individuals or part of an extensive criminal networks, all which have the same mission – exploiting vulnerable people for profit.

Although human trafficking victims are thought to be a problem affecting women, men are also victims; in some parts of the world, they're victimized more often than women. It is estimated that 98% of sex trafficking victims are female and 2% are male.[5] Identification may be difficult due to lack of awareness of the part of health care workers and, most victims won't speak up due to shame and humiliation.

A misconception of the public is that victims of human trafficking will immediately ask for help and will self-identify as a victim of crime. The reality is that victims of human trafficking often do not seek help or self-identify themselves due to a variety of reasons, such as lack of trust, self-blame, or specific instructions by the traffickers on how to behavior in public. There is frequently a negative consequence for the victim if they reach out to the police or medical personnel. Trust building is often needed to uncover the victim's whole experience.

Health care workers need to be able to recognize the potential 'red flags' and indicators of human trafficking and report them so intervention can take place. The following indicators may identify a potential victim of human trafficking:

- ✓ Is not free to leave or come and go at will
- ✓ Is unpaid, paid very little or only through tips
- ✓ Works excessively long and unusual hours
- ✓ Is fearful, anxious, depressed or tense
- ✓ Avoids eye contact
- ✓ Appearance that doesn't match stated age
- ✓ Is not allowed breaks or unusual restrictions at work
- ✓ Owes a large debt and is unable to pay it off
- ✓ Lacks medical care or is denied medical services when needed
- ✓ Appears malnourished and shows signs of physical abuse
- ✓ Is not in control of their own money or possessions
- ✓ Has several inconsistencies in their story when asked
- ✓ Loss of sense of time.[3]

If any health care provider recognizes any of these indicators, they should contact the National Human Trafficking Resource Center hotline at 1-888-373-7888 to make a referral and report their observations immediately.

Human trafficking is a form of modern day slavery and is considered a crime under federal and international law; it is also a crime in every state in the United States. The Trafficking Victims Protection Act of 2000 was the first comprehensive federal law to address trafficking in individuals. The law addressed prevention, protection, and prosecution. According to federal law, any minor under the age of 18 engaging in commercial sex is a victim of sex trafficking, regardless of the presence of force, fraud, or coercion.[3]

To address this global problem, it is essential that all health care workers take on the responsibility to educate themselves about human trafficking, be acquainted with screening questions to ask to identify victims, and know what resources are available to help victims. As frontline health experts, we are in a unique position to help stop human trafficking. We may be the only outside person that the victim comes in contact with who is able or willing to help them attain their safety and freedom. As we go forward in our practice settings, be diligent to make sure that any opportunities to assist victims are not missed.

REFERENCES

1. De Chesnay M. Sex trafficking: a clinical guide for nurses. New York, NY: Springer Publishing Company, 2013.

2. International Labor Organization [ILO] 21 million people are now victims of forced labor. Website: http://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_181961/lang--en/index.htm 2012; Accessed 2015.

3. National Human Trafficking Resource Center [NHTRC[. Human trafficking. Website: http://www.traffickingresourcecenter.org/type-trafficking/human-trafficking 2015; Accessed 2015.

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4. Centers for Disease Control [CDC]. Understanding sex trafficking. Website: http://www.cdc.gov/violenceprevention/sexualviolence/trafficking.html 2015; Accessed 2015.

5. Perkins A. The truth about human trafficking. *Nursing made incredibly easy.* 2015; 13(6): 32-40. doi: 10.1097/01.NME.0000471841.37883.f5

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Research

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Depressive Symptoms, Correlates, and the Marital Relationship in Women with Breast Cancer in Saudi Arabia

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ABSTRACT

The relationship between the quality of the marital relationship and depressive symptoms in married women with breast cancer in Jeddah, Saudi Arabia, was examined. A consecutive series of 50 women with breast cancer were interviewed using a close-ended questionnaire. Over 20% of women had depressive symptoms indicating a probable depressive disorder using the Hospital Anxiety and Depression Scale. Although a weak relationship in the expected direction was found, quality of the marital relationship was not significantly related to depressive symptoms (B=-0.09, SE=0.06, t=-1.54, p=0.13). Depressive symptoms were primarily driven by educational level, socioeconomic factors, age, and type of treatment.

KEYWORDS: Breast cancer; Depression; Correlates; Saudi Arabia; Marital quality; Spouse support.

ABBREVIATIONS: KSA: Kingdom of Saudi Arabia; KAU: King Abdulaziz University; HADS: Hospital Anxiety and Depression Scale; QMI: Quality of Marriage Index; SPS: Spousal Perception Scale; HADS-D: Hospital Anxiety and Depression Scale-Depression; DSM-IV: Diagnostic and Statistical Manual of Mental Disorders, 4th Edition.

INTRODUCTION

Breast cancer is a major health problem in the Kingdom of Saudi Arabia (KSA),[1] and has been the most common cancer in women for the past 12 years in KSA.[2] Late stage at presentation and occurrence in young women are serious problems, especially in countries like KSA where the development of breast cancer is increasing and developing at a younger age.[3,4]

Depression is common in patients with cancer, with a recent meta-analysis of 94 studies finding significant symptoms in 29.0% (95% confidence intervals 10.1-52.9) of patients depending on the particular cancer, the particular way that depression is measured, and the particular study and location.[5] In one of the first studies to examine depression in those with cancer, now considered a classic, researchers examined 215 women from three outpatient cancer centers in the US finding that adjustment disorder or major depression was present in 50%

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of patients.[6] Similar results have been reported among cancer patients in more recent studies, especially those who are hospitalized.[7-9]

Rates depend largely on the type of measure used to assess depression. A 20-year review of depression after the diagnosis of breast cancer found that rates based on *screening* measures ranged from 15 to 30%, whereas for depressive disorder based on *structured psychiatric interview*, they ranged from 5-15%.[10] In one of the largest studies, completed since that 20-year review, researchers examined the prevalence of emotional symptoms in 1,996 breast cancer cases seen at Johns Hopkins Oncology Center (Baltimore, Maryland, USA) between 1984 and 2000.[11] In that study, only 2.8% had pure depressive symptoms while an additional 10.8% had mixed symptoms of depression and anxiety. Depression is not a benign disease in women with breast cancer, and may adversely affect the course of cancer over time reducing survival.[12,13] It may do so by adverse effects on immune function[14] and by decreasing the likelihood of accepting and complying with chemotherapy,[15] especially hormonal therapy in younger women.[16]

The highest rates of depression have been reported during the first year after diagnosis,[17] especially in women who are younger.[18] Women who receive adjuvant chemotherapy report more depressive symptoms,[19] which are thought to be due to the distressing side effects that chemotherapy can have (direct effects of chemotherapy on mood, energy level, cognitive functioning, and pain, which all interfere with activity).[20] Chemotherapeutic agents such as tamoxifen and aromatase inhibitors can induce sudden and intense menopausal symptoms in breast cancer patients, in whom estrogen replacement therapy is contraindicated.[20] Because of this, women with breast cancer may be even more vulnerable to depression than patients with other kinds of cancer.

Cancer stage has generally not been found to be a strong predictor of depression in breast cancer patients,[21] although there are numerous exceptions,[22,23] and the risk of depression increases with disease severity, level of patient disability, and physical impairment.[24] Other factors that increase risk of depression include a past history of psychiatric illness,[25] neurotic personality traits,[26] and ethnic/emigrant status.[27]

Another factor related to depression in women with breast cancer is lack of a confiding relationship, and the most confiding relationship in this regard is often the spouse.[28] The quality of the marital relationship, however, may suffer following diagnosis and this may further increase depression risk. In fact, a vicious cycle can develop with depression and treatments for depression adversely affect sexual functioning and other aspects of intimacy in marriage.[29] Having the care and support of a loving spouse can help to buffer the shocking news of this deadly illness, the side effects of treatment, the life-threatening complications of the disease, and the constant fear of recurrence among those women who achieve remission. However, the diagnosis of cancer can also adversely impact the emotional state of spouses, many of whom experience significant depressive symptoms as well, making them less able to provide support and care during this time.[30,31] Lack of spousal support, then, is not uncommon. Depression can also adversely affect the woman's ability to fulfil her obligations at home, particularly for young women who are still raising children.[16] All of these factors can have a devastating effect on the marital relationship.

SAUDI ARABIA

Little systematic information exists on the mental health of women living with breast cancer in the Middle East and we could find no research from Arabic countries that examined how the quality of the marital relationship may influence the likelihood of these women developing depressive symptoms. An even greater research gap exists in Saudi Arabia, where there is almost a total absence of data on depression and other emotional symptoms experienced by married women with breast cancer. This conservative country has a rich historical past rooted in the culture and traditions of Bedouin tribes and is the place where the great religion of Islam was born and now Muslims from all over the world come to worship. We were able to locate only one study of the mental health of cancer patients, which was conducted at the King Khalid National Reserve Hospital and involved 30 cancer patients on the inpatient service (including 9 patients with breast cancer).[32] Half of the patients (n=15) had a mental disorder based on (Diagnostic and Statistical Manual of Mental Disorders, 4th Edition) DSM-IV clinical criteria, including nine with adjustment disorder, three with major depression, and three with generalized anxiety disorder; no information on correlates or specific information on breast cancer was provided.

The only study that has examined the knowledge and attitudes of men toward breast cancer in Saudi Arabia (and the only study examining any psychological or social aspect of breast cancer in this country) examined 500 men who accompanied their female relatives to outpatient clinics at King Abdulaziz University hospital in Jeddah.[33] Nearly a quarter (24%) did not know the symptoms of breast cancer, and 13% thought that all cases of breast cancer ended with mastectomy. When the participants were asked what they would do if their wives were diagnosed with breast cancer, 9.4% said they would leave their wives.

Given the gap of knowledge on depression in women with breast cancer in Saudi Arabia, a preliminary study to examine the prevalence of depressive symptoms and to identify risk factors for depression (quality of the marital relationship, in particular) among women with breast cancer living in a large urban city in this country was conducted. Relationship with anxiety symptoms have been reported elsewhere.[34]

OBJECTIVES

The present study sought to (1) determine the preva-

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lence of depressive symptoms in younger and middle-aged married women with breast cancer being seen in a university-based outpatient clinic in Saudi Arabia; (2) determine whether marital relationship quality was associated with depressive symptoms, independent of other risk factors; and (3) determine whether nationality (Saudi *vs.* emigrant) interacted with the relationship between marital quality and depression. It was hypothesized that depressive symptoms will be prevalent, that higher marital quality will be strongly and inversely related to depressive symptoms, and that the inverse relationship between marital quality and depressive symptoms will be strongest among Saudi citizens who are likely most influenced by the surrounding Arabic and Bedouin culture.

METHODS

In this descriptive study, a consecutive series of women diagnosed with breast cancer attending the outpatient clinic at the Sheikh Mohammed Hussein Al-Amoudi Breast Cancer Center of Excellence at King Abdulaziz University (KAU) in Jeddah were approached. Inclusion criteria were (1) age 18-65; (2) documented diagnosis of breast cancer; (3) female; (4) currently married; and (5) attending the clinic on days that interviewers were present.

The questionnaire was translated into Arabic. The study was explained to participants and informed consent was obtained. Medical students, trained by KAU psychiatry faculty, administered the questionnaire to eligible participants. The women filled out the questionnaires by themselves without assistance. The ethics committee of King Abdulaziz University Hospital approved the study.

Questionnaire

Demographic characteristics assessed included age, nationality/citizenship (Saudi=1 *vs.* emigrant=0), education level (none=1, primary school only=2, high school only=3, university=4, post-graduate=5), employment status (yes=1 *vs.* no=0), and family yearly income (<36,000 SAR=1; 36,000 to 60,000=2; >60,000=3).

Cancer-related: Duration of illness in months and type of treatment received (radiation therapy, chemotherapy, and/or surgery) were assessed.

Depression: The Hospital Anxiety and Depression Scale (HADS)[35,36] is a self-rated scale measuring anxiety and depressive symptoms in outpatient medical populations, and has been used in many studies of women with breast cancer,[37,38] including at least two studies in the Middle East.[39,40] The HADS includes a 7-item depression subscale Hospital Anxiety and Depression Scale-Depression (HADS-D) where each item is rated from 0 to 3, with scores ranging from 0 to 21 (higher scores indicating greater depression). Scores 0-7 indicate no significant depression, 8-10 "possible" depression, and >10 "probable" depression. These cut-offs have been shown to have a sensitivity and specificity of approximately 80% when compared against clinical interviews.[41] The Cronbach's alpha for the depression subscale has been reported to be high (0.86).[42] In the present sample, the alpha was 0.84, which is above the threshold of 0.70 as recommended.[43]

Marital relations: Marital relationships were assessed with two standard scales: the 6-item subscale of the Spousal Perception Scale (SPS)[44] and the 6-item Quality of Marriage Index (QMI).[45] The SPS is a self-rated scale that includes two 6-item subscales, one assessing spousal emotional support and one measuring emotional strain. We use here the 6-item perceived emotional support from spouse subscale. Each of the 6 items is rated on a scale from 1 (not at all) to 4 (a lot), with a score range from 6 to 24 where higher scores indicate greater spousal support. The Cronbach's alpha of the scale is reported to be 0.91.[46] In the present study, the internal reliability was likewise high (alpha=0.85). The QMI is a self-rated scale that includes items assessing the "essential goodness of a relationship." Each of the 6 items is rated on a scale from 1 (very strong disagreement) to 7 (very strong agreement) with a theoretical scale score ranges from 0 to 42 (higher scores indicating a more positive marital relationship). Internal reliability of the QMI is reported to range from 0.91 to 0.97 in husbands and wives.[45] The alpha in the present sample was 0.89. In order to assess overall marital quality and limit the number of analyses, the SPS and QMI were combined to form a single 12-item scale whose score ranged from 6 to 66 (alpha=0.91 in the present sample).

Statistical Analysis

Descriptive statistics were used to summarize demographic, cancer-related, psychological, and marital adjustment characteristics (Table 1). Bivariate correlations (Pearson r) were used to construct a correlation matrix with all study variables (Table 2). For multivariate analyses, income was dichotomized into low (<36,000 SAR/year=0) *vs.* high (≥36,000=1), and education was dichotomized into low (0=no education or grammar school [primary] only) *vs.* high (1=high school [secondary] or greater). Blocks of variables were entered in a stepwise fashion into three general linear models predicting anxiety symptoms: Model 1 included only sample demographics; Model 2 added cancer-related factors; and Model 3 added overall marital quality (Table 3). Since the sample size was relatively small, only variables significant at $p<0.10$ were carried forward into later models. Given the exploratory nature of these analyses, significance level was set at $p\leq0.05$ and trend level was set at $0.05<p<0.10$. Analyses were not adjusted for multiple comparisons. The SAS statistical package (version 9.3; SAS Institute Inc., Cary, North Carolina, USA) was used to perform analyses.

RESULTS

All women (100%) approached by the medical students agreed to participate (n=50), although one participant com-

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Demographics	Mean (SD) (range)	%(n)
Age, years	48.9(7.1)(35-65)	
Nationality, % Saudi (n)		58.3(28)
Education, % high school or more (n)		73.5(36)
Employment status, % employed (n)		31.9(15)
Family income per month (SAR), % (n)		
<3000 (750 USD)		12.2(6)
3000-5000 (750-1250 USD)		61.2(30)
>5000 (1250 USD)		26.5(13)
Cancer characteristics		
Duration of illness, months	38.4(48.9)(0.5-180)	
Treatment, % (n)		
Radiation therapy		57.1(28)
Chemotherapy		83.7(41)
Surgery		89.8(44)
Depression		
Hospital Anxiety and Depression Scale-D (total)	6.2(4.3)(0-17)	
(1) Enjoys thing as much as used to (reverse)	1.0 (0.9) (0-3)	
(2) Can laugh & see funny side (reverse)	0.9(0.8)(0-3)	
(3) Feels cheerful (reverse)	0.9(0.8)(0-3)	
(4) Feels slowed down	1.0(0.8)(0-3)	
(5) Have lost interest in appearance	1.1(1.0)(0-3)	
(6) Looks forward with enjoyment (reverse)	0.6(0.8)(0-3)	
(7) Enjoys TV, radio program, book (reverse)	0.7(0.9)(0-3)	
HADS-D score 0-7 (no significant depression)		70.8(34)
HADS-D score 8-10 (possible depression)		8.3(4)
HADS-D score 11-17 (probable depression)		20.8(10)
Marital Quality		
Spousal Perception Scale (SPS) (total)	16.7(3.9)(6-23)	
(1) Spouse or partner really cares	2.7(0.8)(1-4)	
(2) Spouse understands the way you feel	2.6(0.8)(1-4)	
(3) Spouse appreciates you	2.9(0.8)(1-4)	
(4) Can rely on spouse if have serious problem	2.8(0.9)(1-4)	
(5) Can talk about worries with spouse	2.8(0.9)(1-4)	
(6) Can relax and be yourself around spouse	2.8(0.9)(1-4)	
Quality of Marriage Index (QMI) (total)	31.0(5.7)(9-40)	
(1) Has good relationship with partner	5.2(1.0)(2-7)	
(2) Relationship with partner is stable	5.1(1.1)(2-7)	
(3) Has strong relationship with partner	5.0(1.2)(1-7)	
(4) Relationship with partner makes me happy	5.3(1.1)(2-7)	
(5) Fells like part of a team with partner	5.2(1.3)(1-7)	
(6) Could not be more happy in relationship	5.2(1.5)(1-7)	
Total Marital Quality (SPS+QMI)	47.6(8.7)(15-62)	

n=47-49

Table 1: Characteristics of the sample.

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	2	3	4	5	6	7	8	9	10	11	12	13
1. Age	.12	-.13	-.02	.16	.27*	.30*	.10	.17	-.23	-.16	-.10	-.15
2. Nationality	-	.36*	.42*	.48*	.16	.19	-.04	.13	-.28*	-.13	-.09	-.13
3. Education	-	-	.63*	.66*	.22	.18	-.04	-.08	-.48*	.27*	.30*	.31*
4. Employment	-	-	-	.31*	.06	.13	-.05	.09	-.33*	.29*	.15	.26*
5. Income	-	-	-	-	.38*	.27*	-.08	-.03	-.31*	.00	.09	.04
6. Duration	-	-	-	-	-	.59*	.33*	.22	-.19	.11	.19	.16
7. Radiation therapy	-	-	-	-	-	-	.51*	.25*	-.38*	-.05	-.01	-.04
8. Chemotherapy	-	-	-	-	-	-	-	-.15	-.21	.01	-.05	-.01
9. Surgery	-	-	-	-	-	-	-	-	-.05	-.21	-.09	-.18
10. HADS-D	-	-	-	-	-	-	-	-	-	-.19	-.20	-.21
11. QMI	-	-	-	-	-	-	-	-	-	-	.65*	.94*
12. SPS	-	-	-	-	-	-	-	-	-	-	-	.87*
13. MQ-total	-	-	-	-	-	-	-	-	-	-	-	-

SPS: Spousal Perception Scale; QMI: Quality of Marriage Index; MQ-total: SPS + QMI; HADS-D: Hospital Anxiety and Depression Scale-Depression, *p<0.10

Table 2: Bivariate correlations between all variables.

	Model 1	**Model 2**	**Model 3**
Demographics	*B(SE)*	*B(SE)*	*B(SE)*
Age	-0.15(0.05)***	-0.12(0.06)**	-0.12(0.05)**
Nationality	0.64(1.17)	---	---
Education	-3.73(1.65)**	-4.63(1.23)****	-4.33(1.21)****
Employment	-1.48(1.23)	---	---
Income	-2.76(1.96)	---	---
Illness characteristics			
Duration of illness	---	0.01(0.01)	---
Rx (radiation *vs.* other)	---	-2.37(1.35)*	-1.96(1.11)*
Marital quality			
MQ-total	---	---	-0.09(0.06)
Model R-square (n)	0.44(46)****	0.37(48)****	0.40(48)****

Rx: treatment; SPS: Spousal Perception Scale; QMI: Quality of Marriage Index; MQ-total: SPS + QMI
HADS-D: Hospital Anxiety and Depression Scale-Depression
*0.05<p<0.10, **p<0.05, ***p<0.01, ****p<0.001

Table 3: Multivariate model examining relationships between depression (HADS-D) and overall marital quality (MQ-total).

pleted only part of the questionnaire, leaving a final sample of 49. Women were on average 48.9 years old; slightly more than half the sample was Saudi citizens (58%); about three-quarters (74%) had a high school education or more; about one-third (32%) was employed; and the majority (61%) had a family income of 36,000-60,000 SAR/year ($9,720 USD-$16,200 USD) (Table 1). Average time since breast cancer diagnosis was about 3 years (38.4 months), although duration ranged from 2 weeks to 15 years. Most women had undergone breast cancer surgery (90%) and chemotherapy (84%), and the majority had received radiation therapy (57%). Overall marital adjustment was moderate with a score of 47.6 on a scale whose possible range was 6-66.

The average number of depressive symptoms in women was 6.2(SD=4.3). The prevalence of 'possible' significant depression (HADS-D score 8-10) was 8.3% and 'probable' depression (HADS-D score 11-21) was 20.8%. The most common depressive symptom was loss of interest in appearance. Bivariate correlates of depressive symptoms were emigrant status (*vs.* Saudi nationals) (r=-0.28, p=0.06), lower education (r=-0.48, p=0.0006), lack of employment (r=-0.33, p=0.02), lower fam-

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ily income (r=-0.31, p= 0.03), and not having received radiation therapy (r=-0.38, p=0.007) (Table 2). Time since diagnosis was not related to depressive symptoms. There was a weak, non-significant inverse relationship between depressive symptoms and perception that spouse cares and really understands (SPS) (r=-.20, p=0.17), score on the marital quality index (MQI) (r=-0.19, p=0.20), and marital relationship quality overall (r=-0.21, p=0.15) (see Figure 1, where marital quality divided into deciles (tenths) is plotted against depressive symptoms).

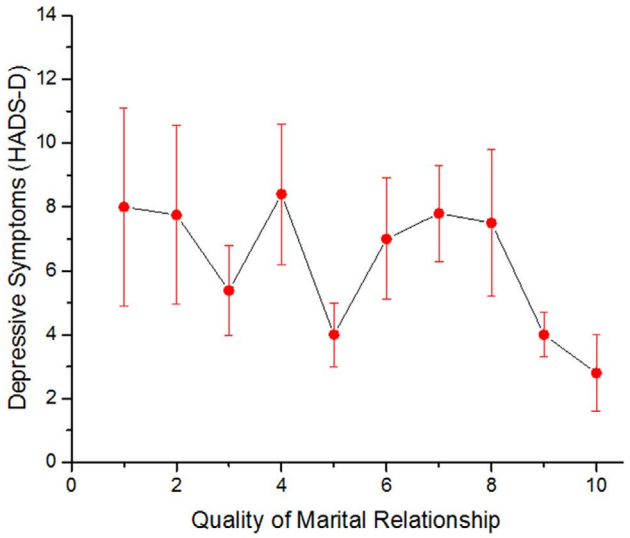

Figure 1: Relationship between quality of the marital relationship and depressive symptoms (standard error). HADS-D: Hospital Anxiety and Depression Scale-Depression.

Multivariate analyses indicated that only age (B=-0.12, SE=0.05, p=0.03) and education (B=-4.33, SE=1.21, p=0.0009) were significantly and independently associated with depressive symptoms (Table 3, Model 3). As in the bivariate analyses, no significant relationship was found between overall marital quality and depressive symptoms, although a trend in the expected direction was present (B=-0.09, SE=0.06, p=0.13).

Nationality did not influence the relationship between marital quality and depression. The estimate from the regression model for the nationality by marital quality interaction was B=0.10 (SE=14.0, t=0.75, p=0.46). In other words, the relationship between overall marital quality and depressive symptoms was not stronger in women who were Saudi citizen (*vs.* emigrant), as hypothesized.

DISCUSSION

This is the first study to examine the prevalence of depressive symptoms and correlates (marital adjustment, in particular) among married women with breast cancer in Saudi Arabia. More than one in five of these women seen in a university-based outpatient clinic had depressive symptoms severe enough to qualify for a probable depressive disorder. However, contrary to the study's expectations, the quality of the marital relationship was not significantly related to depressive symptoms, and there was no interaction with nationality (Saudi *vs.* emigrant status).

Several reasons help to explain why this study was unable to identify a significant relationship between marital relationship quality and depressive symptoms in these women. First was the relatively small sample size that reduced the power of the study to detect significant relationships. Trends in the expected direction were identified, but did not reach statistical significance. Perhaps a larger sample size would have reduced the likelihood of such a Type II error. Second, women with breast cancer in the Al-Amoudi Breast Cancer Center at KAU receive excellent care, with special attention paid to the effect of the cancer diagnosis on the marital relationship and the woman's mental health. This could reduce both the prevalence of depressive symptoms and strength of relationship to marital quality.

A third explanation for lack of a significant relationship between marital quality and depressive symptoms may have involved a selection effect. Women included in this study were on average three years from initial diagnosis of their breast cancer and were still married. Women in whom the breast cancer diagnosis resulted in significant marital discord may have divorced soon after diagnosis, and would not have been included in the present study. Recall that a survey of men accompanying female family members to the clinics at this same university hospital found that nearly 10% said they would leave their lives if they were diagnosed with breast cancer.[33] Such a selection effect may have reduced variability in responses and decreased the ability to detect significant effects in these women whose marriages had endured and stabilized.

Finally, longstanding religious and Bedouin cultural traditions may have allowed women to accept and successfully cope with a lack of spousal support. In this strongly patriarchal society, then, women may have adapted to their cancer by seeking support from other family members or from their religious beliefs.[47]

More important than marital quality in terms of depression risk in this study was level of education, age, and type of treatment for their cancer. Those with a lower level of education and younger age were more likely to experience depressive symptoms, as were women who did not receive radiation therapy. This is one of the first studies (and possibly only study) to report that education level has an association with depressive symptoms in women with breast cancer, although it is consistent with research finding that minorities, emigrants, women with low income, unemployed, or unmarried (i.e., women with breast cancer from disadvantaged groups) experience greater risk of depression.[27,48,49] Bivariate analyses in the present study also indicated a weak inverse relationship between nationality and depressive symptoms, suggesting that emigrant (minority) status was associated with increased depression. This association, however, was accounted for by the lower education of emigrant

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women (*vs.* Saudi nationals) in multivariate analyses.

As indicated earlier, numerous studies report that younger women with breast cancer have an increased risk of depression,[18,27] and an increased risk of negative health consequences from breast cancer due to a reluctance to accept or comply with hormonal therapies that adversely affect marital intimacy.[29] We too found that younger age was associated with more depressive symptoms, especially in multivariate analyses that controlled for education. Younger women have more family and work responsibilities. The development of breast cancer and its treatments can adversely affect energy level and the ability to engage in physical (and sometimes cognitive) activities. The fact that breast cancer may not be expected (as in older age) can also make it more difficult for younger women to cope.

Finally, those who did not receive radiation therapy were more likely to experience depressive symptoms than women who did. Radiation therapy may have fewer distressing side-effects than either surgery or chemotherapy, and this may account for this finding. Chemotherapy, in particular, has been associated with many side effects and so might be more likely to interfere with life and lead to depression. Alternatively, the receipt of radiation therapy may indicate that the breast cancer was localized and not as advanced,[50] and might have served as a proxy for cancer stage.

LIMITATIONS

A number of limitations affect conclusions that can be drawn from these findings. The sample was relatively small and was acquired from only one university breast cancer clinic in Jeddah, which may limit our ability to generalize results to women with breast cancer in rural areas or those seeking care in non-university settings. Furthermore, the cross-sectional nature of the analyses precludes saying anything about the direction of causation in the relationships detected. Another weakness is our use of a self-report symptom scale to detect depression rather than a structured psychiatric interview. We chose HADS because of its widespread use in studies of breast cancer patients and because the shortness of the scale reduced interview burden on these women, many of whom were frail. Finally, not assessed was detailed information on cancer stage, severity of functional impairment, and concurrent medical co-morbidities, factors known to be correlated with depressive symptoms in other studies.[24,27]

However, the study also has a number of strengths. First, standard measures of depressive symptoms and marital quality with established psychometric properties were used, and the data were carefully analyzed using bivariate and multivariate statistics. Second, this is the first report from Saudi Arabia on the prevalence of depressive symptoms, correlates, and relationship between marital quality and depression in married women with breast cancer. Given the important role that religion, cultural, and social forces play in this Middle Eastern country,[51] even these preliminary findings will be of value in future investigations that examine how quality of the marital relationship influences depression in this setting.

CONCLUSIONS AND RECOMMENDATIONS

Depressive symptoms are common in married women with breast cancer being seen as outpatients in Jeddah, Saudi Arabia. The primary risk factors for depression in this setting are younger age and lower education level. Although weak trends were found in the expected direction, no significant relationship was found between perceptions of spousal support or quality of the marital relationship and depressive symptoms. Low power (given sample size), high quality of care received in this university-based cancer clinic, and a possible selection effect may at least partly explain this lack of association. Nevertheless, given the relatively high prevalence of depressive symptoms in this population, and the potential for cultural influences to affect the marital relationship after breast cancer diagnosis, further research is needed that utilizes a larger sample size, a design that is prospective (beginning immediately after the diagnosis), and controls for severity of illness and functional disability. Clinicians who treat breast cancer patients in Saudi Arabia should also be particularly alert for symptoms of depression in young women and those with lower education.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

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REFERENCES

1. Ibrahim EM, Zeeneldin AA, Sadiq BB, Ezzat AA. The present and the future of breast cancer burden in the kingdom of Saudi Arabia. *Medical Oncology.* 2008; 25: 387-393. doi: 10.1007/s12032-008-9051-5

2. Abulkhair OA, Al Tahan FM, Young SE, Musaad SM, Jazieh ARM. The first national public breast cancer screening program in Saudi Arabia. *Annals of Saudi Medicine.* 2010; 30(5): 350-357. doi: 10.4103/0256-4947.67078

3. El Saghir NS, Khalil MK, Eid T, et al. Trends in epidemiology and management of breast cancer in developing Arab countries: a literature and registry analysis. *International Journal of Surgery.* 2007; 5: 225-223. doi: 10.1016/j.ijsu.2006.06.015

4. Tfayli A, Temraz S, Mrad RA, Shamseddine A. Breast can-

cer in low- and middle-income countries: an emerging and challenging epidemic. *Journal of Oncology*. 2010; 490631: 5. doi: 10.1155/2010/490631

5. Mitchell AJ, Chan M, Bhatti H, et al. Prevalence of depression, anxiety, and adjustment disorder in oncological, haematological, and palliative-care settings: a meta-analysis of 94 interview-based studies. *Lancet Oncology.* 2011; 12(2): 160-174. doi: 10.1016/S1470-2045(11)70002-X

6. Derogatis LR, Morrow GR, Fetting J, et al. The prevalence of psychiatric disorders among cancer patients. *Journal of the American Medical Association.* 1983; 249(6): 751-757. doi: 10.1001/jama.1983.03330300035030

7. Ciaramella A, Polli P. Assessment of depression among cancer patients: the role of pain, cancer type and treatment. *Psycho-Oncology.* 2001; 10: 156-165. doi: 10.1002/pon.505

8. Fu LZ, Wang GZ, Yong CW, et al. Impact of comorbid anxiety and depression on quality of life and cellular immunity changes in patients with digestive tract cancers. *World Journal of Gastroenterology.* 2005; 11: 2313-2318. doi: 10.3748/wjg.v11.i15.2313

9. Linden W, Vodermaier A, MacKenzie R, Greig D. Anxiety and depression after cancer diagnosis: Prevalence rates by cancer type, gender, and age. *Journal of Affective Disorders*. 2012; 141(2): 343-351. doi: 10.1016/j.jad.2012.03.025

10. Fann JR, Thomas-Rich AM, Katon WJ, et al. Major depression after breast cancer: a review of epidemiology and treatment. *General Hospital Psychiatry.* 2008; 30(2): 112-126. doi: 10.1016/j.genhosppsych.2007.10.008

11. Brintzenhofe-Szoc KM, Levin TT, Li Y, Kissane DW, Zabora JR. Mixed anxiety/depression symptoms in a large cancer cohort: prevalence by cancer type. *Psychosomatics.* 2009; 50(4): 383-391. doi: 10.1176/appi.psy.50.4.383

12. Pinquart M, Duberstein PR. Depression and cancer mortality: a meta-analysis. *Psychological Medicine.* 2010; 40(11): 1797-1810. doi: 10.1017/S0033291709992285

13. Giese-Davis J, Collie K, Rancourt KM, Neri E, Kraemer HC, Spiegel D. Decrease in depression symptoms is associated with longer survival in patients with metastatic breast cancer: a secondary analysis. *Journal of Clinical Oncology*. 2011; 29(4): 413-420. doi: 10.1200/JCO.2010.28.4455

14. Lutgendorf SK, Sood AK, Antoni MH. Host factors and cancer progression: biobehavioral signaling pathways and interventions. *Journal of Clinical Oncology.* 2010; 28(26): 4094-4099. doi: 10.1200/JCO.2009.26.9357

15. Manning M, Bettencourt BA. Depression and medication adherence among breast cancer survivors: bridging the gap with the theory of planned behaviour. *Psychology & Health.* 2011; 26(9): 1173-1187. doi: 10.1080/08870446.2010.542815

16. Howard-Anderson J, Ganz PA, Bower JE, Stanton AL. Quality of life, fertility concerns, and behavioral health outcomes in younger breast cancer survivors: a systematic review. *Journal of the National Cancer Institute.* 2012; 104(5): 386-405. doi: 10.1093/jnci/djr541

17. Henselmans I, Helgeson VS, Seltman H, de Vries J, Sanderman R, Ranchor AV. Identification and prediction of distress trajectories in the first year after a breast cancer diagnosis. *Health Psychology.* 2010; 29(2): 160-168. doi: 10.1037/a0017806

18. Avis NE, Levine B, Naughton MJ, Case LD, Naftalis E, Van Zee KJ. Age-related longitudinal changes in depressive symptoms following breast cancer diagnosis and treatment. *Breast Cancer Research and Treatment.* 2013; 139(1): 199-206. doi: 10.1007/s10549-013-2513-2

19. So WK, Marsh G, Ling WM, et al. Anxiety, depression and quality of life among Chinese breast cancer patients during adjuvant therapy. *European Journal of Oncology Nursing.* 2010; 14(1): 17-22. doi: 10.1016/j.ejon.2009.07.005

20. Bower JE, Ganz PA, Irwin MR, Kwan L, Breen EC, Cole SW. Inflammation and behavioral symptoms after breast cancer treatment: do fatigue, depression, and sleep disturbance share a common underlying mechanism? *Journal of Clinical Oncology.* 2011; 29(26): 3517-3522. doi: 10.1200/JCO.2011.36.1154

21. Vodermaier A, Linden W, MacKenzie R, Greig D, Marshall C. Disease stage predicts post-diagnosis anxiety and depression only in some types of cancer. *British Journal of Cancer*. 2011; 105(12): 1814-1817. doi: 10.1038/bjc.2011.503

22. Hinz A, Krauss O, Hauss JP, et al. Anxiety and depression in cancer patients compared with the general population. *European Journal of Cancer Care*. 2010; 19(4): 522-529. doi: 10.1111/j.1365-2354.2009.01088.x

23. Gorman JR, Malcarne VL, Roesch SC, Madlensky L, Pierce JP. Depressive symptoms among young breast cancer survivors: the importance of reproductive concerns. *Breast Cancer Research and Treatment.* 2010; 123(2): 477-485. doi: 10.1007/s10549-010-0768-4

24. Banks E, Byles JE, Gibson RE, et al. Is psychological distress in people living with cancer related to the fact of diagnosis, current treatment or level of disability? findings from a large Australian study. *Medical Journal of Australia*. 2010; 193(5): S62-S67.

25. Hill J, Holcombe C, Clark L, et al. Predictors of onset of

depression and anxiety in the year after diagnosis of breast cancer. *Psychological Medicine*. 2011; 41(07): 1429-1436. doi: 10.1017/S0033291710001868

26. Härtl K, Engel J, Herschbach P, Reinecker H, Sommer H, Friese K. Personality traits and psychosocial stress: quality of life over 2 years following breast cancer diagnosis and psychological impact factors. *Psycho-Oncology*. 2010; 19(2): 160-169. doi: 10.1002/pon.1536

27. Christensen S, Zachariae R, Jensen AB, et al. Prevalence and risk of depressive symptoms 3-4 months post-surgery in a nationwide cohort study of Danish women treated for early stage breast-cancer. *Breast Cancer Research and Treatment*. 2009; 113(2): 339-355. doi: 10.1007/s10549-008-9920-9

28. Talley A, Molix L, Schlegel RJ, Bettencourt A. The influence of breast cancer survivors' perceived partner social support and need satisfaction on depressive symptoms: a longitudinal analysis. *Psychology and Health*. 2010; 25(4): 433-449. doi: 10.1080/08870440802582682

29. Emilee G, Ussher JM, Perz J. Sexuality after breast cancer: a review. *Maturitas*. 2010; 66(4): 397-407. doi: 10.1016/j.maturitas.2010.03.027

30. Stenberg U, Ruland CM, Miaskowski C. Review of the literature on the effects of caring for a patient with cancer. *Psycho-Oncology*. 2010; 19(10): 1013-1025. doi: 10.1002/pon.1670

31. Northouse L, Williams, AL, Given B, McCorkle R. Psychosocial care for family caregivers of patients with cancer. *Journal of Clinical Oncology*. 2012; 30(11): 1227-1234. doi: 10.1200/JCO.2011.39.5798

32. Sherif T1, Jehani T, Saadani M, Andejani AW. Adult oncology and chronically ill patients: comparison of depression, anxiety, and caregiver quality of life. *Eastern Mediterranean Health Journal*. 2001; 7(3): 502-509.

33. Al-Amoudi SM, Abduljabbar HS. Men's knowledge and attitude towards breast cancer in Saudi Arabia. *Saudi Medical Journal*. 2012; 33(5): 547-550.

34. Al-Zaben F, Sehlo MG, Koenig HG. Anxiety symptoms, correlates, and the marital relationship in women with breast cancer in Saudi Arabia. *Saudi Medical Journal*. 2015. in press

35. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta Psychiatrica Scandinavica*. 1983; 67(6): 361-370. doi: 10.1111/j.1600-0447.1983.tb09716.x

36. Brennan C, Worrall-Davies A, McMillan D, Gilbody S, House A. The hospital anxiety and depression scale: a diagnostic meta-analysis of case-finding ability. *Journal of Psychosomatic Research*. 2010; 69(4): 371-378. doi: 10.1016/j.jpsychores.2010.04.006

37. Osborne RH, Elsworth GR, Hopper JL. Age-specific norms and determinants of anxiety and depression in 731 women with breast cancer recruited through a population-based cancer registry. *European Journal of Cancer*. 2003; 39(6): 755-762. doi: 10.1016/S0959-8049(02)00814-6

38. Lueboonthavatchai P. Prevalence and psychosocial factors of anxiety and depression in breast cancer patients. *Journal of the Medical Association of Thailand*. 2007; 90(10): 2164-2174.

39. Hadi N, Asadollahi R, Talei AR. Anxiety, depression and anger in breast cancer patients compared with the general population in Shiraz, Southern Iran. *Iran Red Crescent Medical Journal*. 2009; 11(3): 312-317.

40. Montazeri A, Jarvandi S, Haghighat S, et al. Anxiety and depression in breast cancer patients before and after participation in a cancer support group. *Patient Education & Counselling*. 2001; 45(3): 195-198. doi: 10.1016/S0738-3991(01)00121-5

41. Bjelland I, Dahl A, Haug T, Neckelmann D. The validity of the Hospital Anxiety and Depression Scale: an updated literature review. *Journal of Psychosomatic Research*. 2002; 52: 69-77. doi: 10.1016/S0022-3999(01)00296-3

42. Olsson I, Mykletun A, Dahl A. The hospital anxiety and depression rating scale: a cross-sectional study of psychometrics and case finding abilities in general practice. *BMC Psychiatry*. 2005; 5: 46. doi: 10.1186/1471-244X-5-46

43. Terwee CB, Bot SD, de Boer MR, et al. Quality criteria were proposed for measurement properties of health status questionnaires. *Journal of Clinical Epidemiology*. 2007; 60(1): 34-42. doi: 10.1016/j.jclinepi.2006.03.012

44. ICPSR. Midlife in the United States: a national study of health and well-being, 1994/1995 [data file]. Inter-university consortium for political and social research. Available from the midlife in the United States. Website: www.midus.wisc.edu/data/ 1995; Accessed September 3, 2015.

45. Norton R. Measuring marital quality: a critical look at the dependent variable. *Journal of Marriage & Family*. 1983; 45(1): 141-151. doi: 10.2307/351302

46. Matzek AE, Cooney TM. Spousal perceptions of marital stress and support among grandparent caregivers: variations by life stage. *International Journal of Aging & Human Development*. 2009; 68(2): 109-126. doi: 10.2190/AG.68.2.a

47. Koenig HG, Al-Shohaib S. *Health and Well-being in Islamic Societies*. NY, NY: Springer International, 2014.

ISSN 2380-3940 Open Journal http://dx.doi.org/10.17140/WHOJ-1-109

48. Chen X, Zheng Y, Zheng W, et al. Prevalence of depression and its related factors among Chinese women with breast cancer. *Acta Oncologica*. 2009; 48(8): 1128-1136. doi: 10.3109/02841860903188650

49. Aguado Loi CX, Baldwin JA, McDermott RJ, et al. Risk factors associated with increased depressive symptoms among Latinas diagnosed with breast cancer within 5 years of survivorship. *Psycho-Oncology*. 2013; 22(12): 2779-2788. doi: 10.1002/pon.3357

50. Bastiaannet E, Liefers GJ, De Craen AJM, et al. Breast cancer in elderly compared to younger patients in the Netherlands: stage at diagnosis, treatment and survival in 127,805 unselected patients. *Breast Cancer Research and Treatment*. 2010; 124(3): 801-807. doi: 10.1007/s10549-010-0898-8

51. Silbermann M, Hassan EA. Cultural perspectives in cancer care: impact of Islamic traditions and practices in Middle Eastern countries. *Journal of Pediatric Hematology & Oncology.* 2011; 33 (Suppl 2): S81-S86. doi: 10.1097/MPH.0b013e318230dab6

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Research

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Mother's Experiences and Perceptions of a Continuous Caring Model with Fathers after Caesarean Section: A Qualitative Study

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ABSTRACT

Background: In Chile, mothers and newborns are separated after caesarean sections. The caesarean section rate in Chile is approximately 40%. Once separated, newborns will miss out on the benefits of early contact unless a suitable model of early newborn contact after caesarean section is initiated.
Aim: To describe mothers experiences and perceptions of a continuous parental model of newborn care after caesarean section during mother-infant separation.
Methods: A questionnaire with 4 open ended questions to gather data on the experiences and perceptions of 95 mothers in the obstetric service of Sótero Del Rio Hospital in Chile between 2009 and 2012. Data were analyzed using qualitative content analysis.
Results: One theme family friendly practice after caesarean section and four categories. Mothers described the benefits of this model of caring. The fathers presence was important to mother and baby. Mothers were reassured that the baby was not left alone with staff. It was important for the mothers to see that the father could love the baby as much as the mother. This model of care helped create ties between the father and newborn during the period of mother-infant separation and later with the mother.
Conclusions: Family friendly practice after caesarean section was an important health care intervention for the whole family. This model could be stratified in the Chilean context in the case of complicated births and all caesarean sections.
Clinical Implications: In the Chilean context, there is the potential to increase the number of parents who get to hold their baby immediately after birth and for as long as they like. When the mother and infant are separated after birth, parents can be informed about the benefits of this caring model. Further research using randomized control trials may support biological advantages.

KEYWORDS: Parental continuous care; Newborn; Gentle caesarean section; Content analysis.

ABBREVIATIONS: NICU: Neonatal Intensive Care Unit; RCTs: Randomized Control Trials; UN: United Nations; WHO: World Health Organization; UNICEF: United Nations International Children's Emergency Fund.

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INTRODUCTION

Research has shown the benefits of early newborn contact for the parents.[1,2] The opportunity to hold the newborn infant immediately after birth is the pinnacle of the childbearing process.[3] Previous studies have shown the benefits of early parent-infant contact after birth, which include increased parental sensitivity to the infants signals and the way the newborn presents itself,[4,5] improved initiation of breastfeeding.[6,7] and calmer infant with improved pre-feeding behavior.[7,8]

A Systematic Cochrane Review of 34 Randomized Control Trials (RCTs) by Moore, et al.,[9] explored the benefits of early skin-to-skin contact for mothers and newborn infants immediately after birth. The review involved 2177 mother-infant dyads and these were the results: breastfeeding increased; cardio-respiratory stabilized; infant crying decreased and infant-mother interaction increased.[10] The review confirmed the benefits of early skin-to-skin contact for mothers and newborn infants after birth with no apparent short-or long-term negative effects. A recent review of 7 scientific articles provided some evidence that early skin-to-skin contact with the mother brought about physiological and psychological benefits: breastfeeding was initiated, newborns temperature was maintained, newborns stress reduced, bonding and maternal satisfaction increased.[11]

The World Health Organization (WHO) and the United Nations International Children's Emergency Fund (UNICEF)[12] recommend that mothers and newborns have skin-to-skin contact as soon as the mother is alert after caesarean section. Some research suggests that with collaboration between staff and parents, skin-to-skin contact during caesarean surgery can be facilitated[6,11] while the mother is still on the surgery table.[7] In America, family-centered "gentle caesarean" programmes enable mothers to have skin-to-skin contact during surgery.[13] Hospitals in Europe have developed nursing intervention protocols to minimise mother-infant separation after caesarean births.[14] These programmes have been shown to positively affect maternal-infant interaction and breast feeding initiation after caesarean delivery.[15]

However, in many hospitals around the world the caesarean section rate is increasing with no specific efforts to ensure mothers have body contact with their infant in the first minutes and hours after birth and this delays the first breastfeeding.[11] Biro, et al.,[3] examined the association between maternity care and the model of early newborn contact. Their study found that the majority (92%) of women whose babies remained with them said that holding their babies as soon and for as long as they liked immediately after birth was essential. However, for women separated from their newborns only a minority (47%) reported that holding their baby was essential to them. It is unclear to what extent mother's lack of awareness, self-esteem and the way in which the alternatives were presented to them affected the results. But what is clear is that the suggested models of early newborn contact following maternal-infant separation need to be investigated further.[3]

The caesarean section rate in Chile is approximately 40% and as a result many newborns in Chilean hospitals are separated from their mothers and miss out on the potential benefits of early contact[11] unless a suitable model of early newborn contact after caesarean section is initiated. The aim of this study was to describe mother's experiences and perceptions of a continuous parental model of newborn care after caesarean section during mother-infant separation in a maternity hospital setting in Santiago de Chile. The model of early newborn contact included early and continuous care of the newborn by fathers post-partum until reunion with the mother.

MATERIALS AND METHODS

Setting

This qualitative study describes mother's experiences and perceptions of a model of early newborn contact by fathers in a neonatal unit until reunion with the mother. The study was part of a randomized control research programme at the Sótero del Rio Government Hospital, Santiago de Chile. Between 2009 and 2012 when this study was carried out, the caring routines did not allow fathers to be present in the surgery, post-surgery unit or the neonatal unit. The study was approved by the Ethics Committee, Scientific Assessment Metropolitan Health Service South East (reference no 16/5 2008).

The Model of Continuous Care

Immediately after birth the infant was checked for vitality by a midwife and then cared for under a heater for 30 minutes. The infant was then transferred to the neonatal unit and cared for by the father while the mother recovered in the post-surgery unit. After 90 minutes the mother was reunited with the infant and father at the obstetric unit for a further 90 minutes. The baby was placed with the mother either skin-to-skin or clothed to initiate breast feeding. The father was offered a chair by her bedside to take part in the family re-union. The physical wellbeing and behavior of the infant was observed by staff at the neonatal unit. After the intervention the mother and infant were transferred to the maternity ward for conventional care.

Data Collection

The day before the planned caesarean section the prospective parents were informed both verbally and in writing about the study and were invited to participate. After the intervention and with the mother still in bed, the mothers were asked to complete the questionnaire. The questionnaire covered demographic data and included four open ended questions relating to the mother's experiences and perceptions of the model of early newborn contact with the father. The study focused on

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the first hours immediately after birth in the neonatal unit while the newborn was being cared for by the father. The following questions were asked: "What do you think of fathers as caregivers?" "What do you think of this caring model?" "What happened when you were reunited with your baby?" "What did you think then? What did you feel then?" It took between 15 and 30 minutes for the mothers to complete the questionnaire. After completion the mothers handed the questionnaire to the principal researcher, Ana Ayala (AA). All data remained confidential with the group of researchers.

Study Participants

130 couples were invited to participate, out of which 95 couples agreed to participate and provided verbal and written consent. The main reason for not participating was due to the partner having only limited time in hospital. The average age of the participating mothers was 29 years (SD 6.3) and the reason given for elective caesarean section was that they had had previous caesarean section(s) and 'on demand'. The mothers were healthy, multiparas and had an average of two previous children between 0 and 5 years of age. 53% of the infants being born were girls and 47% were boys. All infants were healthy with a mean weight of 3517 grams.

Analysis

The written responses to the open questions were analyzed qualitatively inspired by Malterud's content analysis.[16] The analysis contained *de-contextualization* and *re-contextualization* phases. In the *de-contextualisation phase*, the paragraphs and sentences were divided into text parts that related to the aim. The text parts were labeled with a code. The codes emerged inductively (Tables 1 and 2). In the step of condensation, the text was translated from Spanish into English by the researchers who were fluent in both Spanish and English. This process of simultaneous translation and condensation resulted in a description of the meaning of each text part. The process continued until a mutual understanding of the translation and meaning of the text parts was obtained.

Further analysis focused *re-contextualization* in a process where the text parts were put together in code groups. The code groups were then described and divided into categories according to similarities and differences. The researchers were all included in the analysis and in the final step of the process the text in the code groups and the division into categories were agreed. One theme emerged: a family friendly practice after caesarean section (Table 3) with 4 categories. Text parts sorted into categories are presented in number (n) and percentage (%) in each category. Quotations have been chosen to illustrate the findings. In the final step of the analysis the principal researcher, Ana Ayala (AA) double checked the original text with the descriptions presented below.

RESULTS

One theme was identified 'family friendly practice' after caesarean section and comprises 4 categories: *'beneficial to the baby'*, *'beneficial to the family'*, *'beneficial to the mother'* and *'beneficial to the father'*. The mothers described the benefits of a continuous parental model of care after caesarean section during mother-infant separation. The father's presence was important to both the baby and mother and was viewed as an enriching experience for the baby. The mothers were reassured in knowing that the baby had not been left alone with staff. It was wonderful for the mothers to experience that a father could love their baby in the same way that a mother does. Mothers felt that ties were created between the father and newborn in the time they spent together and later between her and the newborn. This arrangement was considered *'family friendly practice after caesarean section'*. Quotations have been selected to illustrate and validate the results.

Beneficial to the Baby

In this category the mothers described the benefits of the father's presence and continuous care of the newborn infant.

The father's presence was important: The mothers felt that because they were not able to be with the baby because of post caesarean section caring routines, the fathers' presence was important for the baby: *"It was important for our daughter that the father was present when I was not able to* [be]*"* (Informant 22). The mothers were reassured that the baby had not been left alone with staff. The mothers could see that ties had been created between father and baby and it was an enriching experience for the baby: *"It was super good that ties were created between the baby and his father"* (Informant 60). The mothers heard from the father and staff that the baby was awake but calm and thought this an excellent arrangement for the baby.

Relating to both parents: The arrangement was considered "good practice" (informant 26) because the baby got to spend

Text unit	Condensation	Code	Category	Theme
Nice, very special and wonderful experience, very comfortable with the fact that the father is present	The mother expressed that this experience is different if the father is present	Wonderful experience that the father was present (code58)	Beneficial to the mother	Good practice

Table 1: Example of the analysis process.

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CATEGORY	CODE GROUP	CODES
Beneficial to the baby	The father's presence was important	It was important for our daughter that the father was present
	Relating to both parents	Baby is not alone/not with strangers, babys' recognition of the parents
Beneficial to the family	A way to help the parents take care of their child after caesarean section	I think that this is one way to help women and mothers, parents with their child
	A natural process of becoming mother and father	Caring model/continuous care, mother and father equally important /continuous bonding with parents/family,good for parents
Beneficial to the mother	Supportive environment during mother-infant separation and after reunion	Comfortable, it was very beautiful and gratifying. Beautiful; definitely exceeded all expectations.
	Tranquility while recovering during mother- infant separation	Content, confident, safe/relaxed, wonderful experience the father is present, mother secure, peace, time to recover, calmness
	Happiness and bonding when reunited with the baby	Unforgettable reunion, happy when reunited, love, beautiful experience, bonding/attachment with the mother
	Supported by committed fathers	Supported, understood, feeling the father is committed, pleased as a mother and wife, good experience/unique/excellent, new experience
Beneficial to the Father	Involved and empowered	Bonding father and baby, content father, took care of the baby, the fathers deserve it
	Getting ready for the responsibility	Fathers' presence important for the baby father's involvement
	Unique health care intervention	Closeness, excitement/happiness, new experience for the father/something special for the father

Table 2: Categories, code groups and codes.

Theme	Category
A family friendly practice after caesarean section	Beneficial to the father n=56 codes (21%) Beneficial to the baby, n=12 codes (4.4%) Beneficial to the couple n=77 codes (28.6%) Beneficial to the mother=124 codes (46%)

Table 3: Text parts/codes sorted into categories presented in number (n) and percentage (%) for each category.

time with both parents after birth: *"It was good because the baby can share equal time with the mother and the father"* (Informant 88). This helped the baby relate to both parents and recognise the parents' voice: *"It was very good that our daughter heard familiar voices of his* [the baby's] *father and mother"* (Informant 29). The mothers preferred the baby to be cared for by them or by the father rather than being left alone with staff: *"I think it is very positive because if he [the baby] is not with me he is with his father and not with strangers [staff])"* (Informant 10).

Beneficial to the Family

In this category the mothers described the benefits of fathers' continuous care of the newborn and how it was beneficial to the family.

A way to support the parents to take care of their child after caesarean section: Mothers explained how fathers' care during maternal-infant separation was a good way of providing continuous parental care for their child: *"I think that this is one way to help women and mothers, parents with their children"* (Informant 14). Parent's continuous care for the newborn directly after birth, first by the father and then by the mother, was viewed as an opportunity for the baby to bond with the father first and then with the mother. Early involvement of fathers was seen by mothers as "a gift" (Informant 4). The mothers believe that fathers

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were equally as important to the baby as they were. The idea that the baby was a shared responsibility meant that the father cooperated with the mother from the beginning, laying foundations for how the family would function in the future: *"They* [the fathers] *should be part of it all, the children are made out of two"* (Informant 81). The mothers reflected on how the experience was good for them as a couple because it gave them a shared experience of protecting the baby: *"*[It was a] *great way to awaken the affection between the parents as well"* (Informant 29).

A natural process of becoming mother and father during maternal-infant separation: The arrangement of fathers caring for the baby during separation was seen as part of the natural process of becoming a parent: *"It was something good for us to get to know him* [the baby] f*rom the first minute of life. First with his father and then with me. It was a unique experience to all three of us"* (Informant 9). The mothers appreciated the father's immediate involvement and efforts to get to know the baby: "*Very good because there was a connection with the baby and that is the best. The father adopted his son and then we met all three. I think this was good because the baby created a very close bond to both of us"* (Informant 94).

Beneficial to the Mother

In this category the mothers described how the father's care of the baby was beneficial to them.

Supportive environment during mother-infant separation and after reunion: The supportive environment during maternal-infant separation and after reunion was described as nice, good, pleasant, genial, positive, beautiful and wonderful. The mothers were thankful to the staff that made this care arrangement possible: *"It was exciting and a very good experience at all times"* (Informant 71). It was an experience that exceeded all expectations: *"It was very beautiful and gratifying. Beautiful definitely exceeded all expectations"* (Informant 55). The mothers were aware that not all parents had the opportunity to care for their baby immediately after caesarean section which made their experience unique. The mothers described feeling empowered that they, the father and whole family were in a staff-supported environment that enabled them to care for their baby. Although the mothers wanted to be with their baby, they felt calm during the period of separation because they were in a supported environment: *"I wanted to see my baby right away but I kept calm"* (Informant 72). The mothers described feeling strange once separated from the baby; they felt that something was missing: *"I felt anxious and happy at the same time because I felt something was missing"* (Informant 14). The mothers would have preferred the family to have stayed together rather than be separated. However, the mothers thought that staff were well placed to support both parents to care for the newborn infant. Staff supported the fathers to be affectionate towards the baby and supported them to build emotional ties: *"It was good because he* [the father] *took care of the baby during the first hours of her* [the baby's] *life and then she should remain with me"* (Informant 1).

Tranquility while recovering during mother-infant separation: The mothers expressed how calm, relaxed, safe, secure and happy they felt knowing that the baby was not alone and accompanied by its father: *"I was not worried; I was calm because I knew that the father cared for our daughter"* (Informant 48). The mothers felt safe and could relax knowing that the father was there to protect them and the baby: *"I felt very comfortable and secure knowing that the father was with the baby I knew that nothing could happen to us"* (Informant 33). This aided the mothers' recovery because they could rest in confidence.

Happiness and bonding when reunited with the baby: The mother's recognized the importance of the father taking on the role of primary caregiver. Once the baby was reunited with the mother, she became the primary caregiver, which meant that both parents had a shared experience of being the primary caregiver. The mothers described feeling pleased, happy and content once reunited with their baby: *"It was something beautiful and I remained content"* (Informant 25). It was described as a *"very enriching experience. She took the breast"* (Informant 38). The mothers described feeling overwhelmed with love for their baby: *"I felt very full of love then"* (Informant 91) and talked about the immediate bonding as exciting: *"I was so excited because I felt her* [the baby's] *body on me and that made me immediately attach"* (Informant 46). This bonding was really quite special and the mothers felt close to their baby: *"I had a special bonding I never had with my previous children"* (Informant 55).

Supported by committed fathers: The mothers explained how they felt protected by supportive fathers. The fathers demonstrated their commitment to the mother and baby by keeping them safe. The mothers felt supported and understood by their partner. When the mother and infant were reunited, the mothers saw that the fathers had been spending their time with the baby and this made them happy: *"I felt pleased as a mother and wife"* (Informant 82). The mothers were reassured by the fathers' presence: *"Cute, very special and wonderful, I felt very comfortable with the fact that the father was present"* (Informant 38). At the reunion the mothers were still in a lot of pain from the surgery which made it difficult for them to be close to their baby. This made it even more important to have the fathers' support: *"I felt glad and I wanted to hug him* [the baby] *but I had a lot of pain"* (Informant 64).

Beneficial to the Fathers

In this category the mothers talked about their perceptions of the fathers' involvement and continuous care of the baby during mother-infant separation.

Involved and empowered: The mothers thought it was good that the fathers were present for the first hours of the baby's life because they became involved in the whole experience: *"I felt*

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good that the father participated in the first moment and hours after the birth of the child and that he saw what came after the birth" (Informant 3). The mothers could see that the fathers felt more involved in the care of the baby: *"I think it is very good because the fathers are able to take care of the baby to 100%"* (Informant 48).

Getting ready for the responsibility: The mothers described how the time spent getting closer to the baby helped build the fathers' self esteem. This was described as a positive and enriching experience that helped prepare them for the responsibilities of fatherhood. The mothers were reassured that the father was taking care of the baby as this helped build ties between the father and newborn infant: *"I found it great because the father and child got connected"* (Informant 18). Time spent with the baby meant the fathers' could become attached: *"It was excellent that the father got attached to the baby. It is very important for a fathers' self-esteem"* (Informant 39). The mothers identified a connection between the fathers' closeness to the baby and the father becoming more responsible and growing into fatherhood: *"I really liked that the father felt closer. It made him also more responsible as a father"* (Informant 61).

Unique health care intervention: The opportunity to spend time with the newborn infant was an experience that made the fathers content, happy, proud, excited and emotional. The mothers agreed that the fathers deserved to be content and happy in their parenting role. Caring for the baby immediately after birth was a unique experience for the father and generated new feelings and emotions: *"The father and the baby were able to share an experience and feel new sensations"* (Informant 18). Caring for the newborn was a new experience for the fathers: *"It was the first time my husband entered childbirth"* (Informant 53). In other circumstances the fathers may only have been given a couple of minutes with the newborn baby whereas this experience offered them several hours which was *"very important because the father could not experience this with the previous baby"* (Informant 46).

DISCUSSION

This study describes mothers' experiences and perceptions of a continuous parental model of newborn care after caesarean section during mother-infant separation. The model of early newborn contact started 30 minutes after birth and included continuous presence and care of the newborn infant by fathers postpartum until reunion with the mother. This study found that this model of care benefited the family, parenthood, the newborn infant, the couple and the parents individually.

The mother's descriptions indicate a certain amount of surprise regarding the benefits of a continuous parental model of newborn care which included the fathers. Knowing that the father was there to take care of the baby helped the mothers to rest and relax. At the point of reunion the mothers valued the fathers' support because it was both a happy and exhausting experience for the mothers. This can be explored further from the perspective of a supportive environment. Previous studies have explored the father as a resource for both the mother and baby at the point of reunion after separation.[1,2,17] Health care professionals with knowledge of the benefits of early newborn contact are a valuable resource to parents and can help create supportive environments.[18] Other research has looked at alternative ways of creating supportive environments for caesarean section deliveries which are based on consensual, participatory approaches for all health care professionals and use multidisciplinary strategies.[4,14]

The results of this study, which looked at the experience from the mother's perspective, highlighted how the continuous presence and care of the newborn by the father in the NICU was viewed positively by the mothers. This contrasts with the findings of a study undertaken in an Italian hospital regarding father's attitudes, beliefs and behavior immediately after the birth of their newborn infant.[19] In that study, the fathers felt unprepared to take care of their newborns because of a lack of information about the birthing process and a lack of understanding about women's emotional responses to the birthing experience. The authors[19] recommended that fathers should be targeted for educational interventions that equip fathers with the knowledge about normal birthing processes and an understanding about the needs of newborn infants. However, a recent study by Abraham, et al. contradicts these findings and suggests that bonding and attachment between father and infant is not about education and information but about being involved and responsible primary caregivers. The natural hormonal changes that women experience during pregnancy make them sensitive to their newborn baby. For fathers there are alternative pathways to compensate for the naturally evolving process that gives rise to material instinct and that is through active caregiving. This will happen to every father who becomes involved and responsible for the newborn as they enter into fatherhood.[20]

This study identified one theme: *'a family friend practice after caesarean section'*. It has identified the importance of healthcare professionals in providing a) a supportive environment and b) information about the benefits to the whole family of this simple but valuable health care intervention. This study shows the importance of a supportive environment and how this can be provided if healthcare professionals have insight into the familiarization process that is both natural and instinctive during the first hours after birth.[4,14]

In this study, the mothers felt that the child recognized the voices of both parents naturally and instinctively. The result is consistent with the findings of a study by Velandia, et al.[21] which describes the onset of vocal interaction. The study concluded that it is reasonable to encourage parents to maintain skin-to-skin contact with the newborn after caesarean section because it promotes early onset of vocal communication. Their

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results showed that infants placed in skin-to-skin contact and who were exposed to the parents speech, initiated communication with soliciting calls within approximately 15 minutes after birth *via* caesarean section.[7]

The authors of this study wish caesarean section births to be "gentle" to the newborn and its parents.[14] Our results suggest that a caring model of early newborn continuous contact with its parents immediately after caesarean section can make caesarean section a more "gentle" way of giving birth. In many societies around the world the infant and mother are together after birth, swaddled, not nude and fathers are not involved in childbirth.[5] Taking cultural differences into account, continuous caring models involving skin-to-skin care immediately after birth should be seen as "good practice".[1,2,6,7,22] In a study by Velandia, et al.[21] it was suggested that early mother-infant skin-to-skin care immediately after caesarean section should be encouraged until the first breastfeed takes place. However, if the mother is unable to provide skin-to-skin care immediately after birth, father-infant skin-to-skin care is a valuable alternative because it enhances paternal interaction. The findings of this present study support the suggestion of Velandia, et al.[21]

The mothers felt that during mother-infant separation ties were created between the father and the newborn, which supports findings of other studies in this area.[8,23-25] Regarding benefits to the parents and family as a whole, the results of this study are consistent with a review and meta-synthesis of 29 original qualitative papers from 9 countries which explored the experiences of 401 mothers and 94 fathers.[1,2] The paper presented a theoretical model of "becoming a parent under unfamiliar circumstances" which identified how parent's growth and self-esteem makes them ready to assume responsibility for the newborn infant.[1,2]

STRENGTH AND LIMITATIONS

95 mothers explained how important this caring model was for the entire family. The overall results of this study are consistent with the findings of previous literature reviews[1,2] including smaller interview studies.[23,24,26-28] This indicates that a comprehensive picture has been captured. The uniqueness of this study is the Chilean context and this means that the results can be transferred to other Chilean hospital contexts. With caution, this study can also be transferred to other hospital settings in middle income countries where newborn infants are separated from their mothers as part of routine care. However, further research is needed to identify physiological evidence relating to newborn morbidity and mortality especially in middle income settings.

The main limitation of this study was that only 95 mothers out of 130 agreed to participate and this may have led to bias; respondents may have provided a more positive attitude towards this model of care compared to those who declined to participate. However, for a qualitative study, there were a large number of participants and during analysis of their responses saturation was reached. The first author's (AA) involvement in the data gathering process could have affected the results through social desirability bias. Despite these limitations, measures were taken to strengthen trustworthiness. In order to ensure dependability, the data analysis was performed in a reliable way according to the design of the method.[16] Regarding pre-understanding the first author is a nurse/midwife originally from Chile which strengthens credibility, meaning how well the results captured the reality being explored. Credibility was also enhanced by the other researchers who were not familiar with the setting as this added an external perspective. However, the original text was translated from Spanish to English which has its own limitations. Even though the researchers were familiar with both Spanish and English, the process of translation means that some of the original meaning may have been unintentionally distorted or misrepresented. However, Malterud[16] was used as a suitable analysis method to deal with that issue. Additionally, the principal researcher, Ana Ayala (AA) double checked the original text parts with the interpreted condensed and translated text. Furthermore, a mutual understanding between the authors was obtained in each step of the analysis and pre-understanding has been bridled.

CONCLUSION AND CLINICAL IMPLICATION FOR PRACTICE

The model of early newborn contact could be stratified in the Chilean context specifically after complicated births or caesarean sections. Participating mothers agreed that this was an important health care intervention for the new family. Our results suggest that there is potential to increase the number of mothers and fathers who get to hold their baby sooner and for as long as they like in the first hours after birth with caesarean section. Parents can be informed about the benefits of this caring model when mother and infant are separated at birth. Further research with randomized control trials may support the biological advantages.

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CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

REFERENCES

1. Anderzen-Carlsson A, Lamy ZC, Eriksson M. Parental experiences of providing skin-to-skin care to their newborn infant-Part 1: a qualitative systematic review. *International Journal of*

Qualitative Studies on Health and Well-being. 2014; 9: 24906. doi: 10.3402/qhw.v9.24906

2. Anderzen-Carlsson A, Lamy ZC, Tingvall M, Eriksson M. Parental experiences of providing skin-to-skin care to their newborn infant-Part 2: a qualitative meta-synthesis. *International Journal of Qualitative Studies on Health and Well-being*. 2014; 9: 24907. doi: 10.3402/qhw.v9.24907

3. Biro MA, Yelland JS, Brown SJ. Who is holding the baby? women's experiences of contact with their baby immediately after birth: an Australian population-based survey. *Women and Birth*. 2015. doi: 10.1016/j.wombi.2015.05.001

4. Arnott B, Meins E. Continuity in mind-mindedness from pregnancy to the first year of life. *Infant Behavior and Development*. 2008; 31(4): 647-654. doi: 10.1016/j.infbeh.2008.07.001

5. Negayama K, Delafield-Butt JT, Momose K, et al. Embodied intersubjective engagement in mother–infant tactile communication: a cross-cultural study of Japanese and Scottish mother–infant behaviors during infant pick-up. *Frontiers in Psychology*. 2015; 6. doi: 10.3389/fpsyg.2015.00066

6. Hung KJ, Berg O. Early skin-to-skin after cesarean to improve breastfeeding. MCN: *The American Journal of Maternal/Child Nursing*. 2011; 36(5): 318-324. doi: 10.1097/NMC.0b013e3182266314

7. Velandia M, Matthisen AS, Uvnäs-Moberg K, Nissen E. Onset of vocal interaction between parents and newborns in skin-to-skin contact immediately after elective cesarean section. *Birth*. 2010; 37(3): 192-201. doi: 10.1111/j.1523-536X.2010.00406.x

8. Erlandsson K, Fagerberg I. Mothers' lived experiences of co-care and part-care after birth, and their strong desire to be close to their baby. *Midwifery*. 2005; 21(2): 131-138. doi: 10.1016/j.midw.2004.09.008

9. Moore ER, Anderson GC, Bergman N. Early skin-to-skin contact for mothers and their healthy newborn infants. *Cochrane Database Syst Rev*. 2007; 3. doi: 10.1002/14651858.CD003519.pub2

10. Moore E, Anderson GC, Bergman N, Dowswell T. Early skin-to-skin contact for mothers and their healthy newborn infants (*Review*). 2007; 5: CD003519. doi: 10.1002/14651858.CD003519.pub3

11. Stevens J, Schmied V, Burns E, Dahlen H. Immediate or early skin-to-skin contact after a caesarean section: a review of the literature. *Maternal & Child Nutrition*. 2014; 10(4): 456-473. doi: 10.1111/mcn.12128

12. UNICEF. Convention on the Rights of the Child. Available at: http://www.ohchr.org/en/professionalinterest/pages/crc.aspx 1989; Accessed 2015.

13. Magee SR, Battle C, Morton J, Nothnagle M. Promotion of family-centered birth with gentle cesarean delivery. *The Journal of the American Board of Family Medicine*. 2014; 27(5): 690-693. doi: 10.3122/jabfm.2014.05.140014

14. de Alba-Romero C, Camaño-Gutiérrez I, López-Hernández P, et al. Postcesarean section skin-to-skin contact of mother and child. *Journal of Human Lactation*. 2014; 283-286. doi: 10.1177/0890334414535506

15. Nolan A, Lawrence C. A pilot study of a nursing intervention protocol to minimize maternal-infant separation after cesarean birth. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*. 2009; 38(4): 430-442. doi: 10.1111/j.1552-6909.2009.01039.x

16. Malterud K. Qualitative methods in medical reseach: an introduction (Kvalitativa metoder i medicinsk forskning: en introduktion. Lund: Studentlitteratur. 2009; 86-101.

17. Erlandsson K, Lindgren H. Being a resource for both mother and child: fathers experiences following a complicated birth. *The Journal of Perinatal Education*. 2011; 20(2): 91. doi: 10.1891/1058-1243.20.2.91

18. Bystrova K, Widström A-M, Matthiesen A-S, et al. Early lactation performance in primiparous and multiparous women in relation to different maternity home practices. a randomised trial in St. Petersburg. *International Breastfeeding Journal*. 2007; 2: 9. doi: 10.1186/1746-4358-2-9

19. Pellai A, Festa F, Cilento F, et al. What new fathers know, think and do: a survey about fathering's attitudes, beliefs and behaviors in a sample of 570 men just after the birth of their newborn. *Minerva pediatrica*. 2013; 65(5): 531-540.

20. Abraham E, Hendler T, Shapira-Lichter I, Kanat-Maymone Y, Zagoory-Sharona O, Feldman R. Father's brain is sensitive to childcare experiences. *Proceedings of the National Academy of Sciences*. 2014; 111(27): 9792-9797. doi: 10.1073/pnas.1402569111

21. Velandia M, Uvnäs-Moberg K, Nissen E. Sex differences in newborn interaction with mother or father during skin-to-skin contact after caesarean section. *Acta Paediatrica*. 2012; 101(4): 360-367. doi: 10.1111/j.1651-2227.2011.02523.x

22. Moore ER, Anderson GC, Bergman N, Dowswell T. Early skin-to-skin contact for mothers and their healthy newborn infants. *Cochrane Database Syst Rev*. 2012; 5.

23. Erlandsson K, Christensson K, Fagerberg I. Fathers lived experiences of getting to know their baby while acting as primary

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caregivers immediately following birth. *The Journal of perinatal education*. 2008. 17(2): 28. doi: 10.1624/105812408X298363

24. Erlandsson K, Lindgren H. From belonging to belonging through a blessed moment of love for a child-the birth of a child from the fathers perspective. *Journal of Men's Health*. 2009; 6(4): 338-344.

25. Lindgren H, Erlandsson K. She leads, he follows-fathers experiences of a planned home birth. A Swedish interview study. *Sexual & Reproductive Healthcare*. 2011; 2(2): 65-70. doi: 10.1016/j.srhc.2010.12.002

26. Dalbye R, Calais E, Berg M. Mothers experiences of skin-to-skin care of healthy full-term newborns–a phenomenology study. *Sexual & Reproductive Healthcare*. 2011; 2(3): 107-111. doi: 10.1016/j.srhc.2011.03.003

27. Erlandsson K, Christensson K, Fagerberg I. Fatherhood as taking the child to oneself: a phenomenological observation study after caesarean birth. *Indo-Pacific Journal of Phenomenology*. 2006; 6(2). doi: 10.1080/20797222.2006.11433920

28. Erlandsson K, Säflund K, Wredling R, Rådestad I. Support after stillbirth and its effect on parental grief over time. *Journal of Social Work in End-of-life & Palliative Care*. 2011; 7(2-3): 139-152. doi: 10.1080/15524256.2011.593152

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Research

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Impact of the Poly Implant Prosthesis Breast Implants Recall in Women With Breast Reconstruction: A South-Eastern French Cross-Sectional Survey Nested in a Prospective Cohort

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ABSTRACT

The Poly Implant Prosthesis (PIP) Breast Implants crisis involved thousands of women in the countries concerned, women with breast cancer in particular. It was proposed here to investigate the impact of the PIP Breast Implants recall on women who had undergone Breast Reconstruction at the time of the recall and to analyze the determinants of their Breast Reconstruction decisional outcomes. A cross-sectional telephone survey was performed nested in prospective geographically based cohorts, which consisted of women from the southeastern France with breast cancer. Women were selected who had Breast Reconstructive surgery just before the PIP recall occurred. Dependent variables were the Psychological Impact of the event, Decisional Regret, and Satisfaction with Breast Reconstruction. Determinants of regret and satisfaction were analyzed using simultaneous equations. Among the 148 eligible women, 113(76%) participated. At the initial reconstruction, 90% (n=102) had a Breast Implant, 10% (n=11) had an autologous reconstruction. The PIP recall induced less intrusive thoughts, measured with the Impact of the Event Scale, in the non-PIP groups compared to the PIP one (p=0.025). Regrets about Breast Reconstruction were expressed by 57%; they occurred more frequently when the decision-making was not felt to be sufficiently proactive (adjusted Odds Ratio (ORadj) 5.1; 95% Confidence Interval (CI) (1.2-20.9)) and in those who were dissatisfied with their Breast Reconstruction (ORadj 0.7(95% CI (0.5-0.9))). Satisfaction was significantly lower in women with a Breast Implant, those whose trust in doctors had decreased, in the information-seekers and in less health-literate women. The PIP recall was not found to affect intrusive ideas or denial in women who did not have a PIP Breast Reconstruction. The high frequency of regrets could be reduced by involving women more strongly in the initial decision-making process. Using existing data-bases to assess the impact of new devices on patients' health is an option which organization deserves to be discussed.

KEYWORDS: Breast implants; Breast Reconstruction; Psychosocial outcomes; PIP implants; Decisional regret; Satisfaction.

ABBREVIATIONS: PIP: Poly Implant Prosthesis; CI: Confidence Interval; ORadj: adjusted Odds Ratio; IES: Impact of Event Scale; EID: Extent of Information Desire.

BACKGROUND

As patient's awareness and technical expertise increase, the rates of breast reconstruc-

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tion after mastectomy continue to rise,[1] but enormous differences can be observed: a median overall reconstruction rate of 24% has been reported, ranging from 5-81%.[2] Implants seem to be the most frequent type of reconstruction, whereas the use of autologous techniques is decreasing.[1,3]

Several Breast Implant crises were generated in the 90's[4] and more recently the Poly Implant Prosthesis (PIP) Breast Implants in 2010.[5,6] The U.S had not been involved in the PIP crisis,[7] but the European countries and Australia have reacted in different ways to this issue[7-10] which clinical implications have been reviewed recently.[11] In March 2010, the French national regulation agency (AFFSAPS) requested that doctors' call back all women who had undergone breast reconstruction/augmentation based on PIP implants. The PIP recall was because the implants were produced with a non-homologated silicone gel. Considerable media attention was attracted by the PIP scandal in France. The characteristics of this scandal have been described in depth by Greco.[12] The publicity it generated seemed likely to have affected women with breast cancer psychologically in terms of their satisfaction and regret with breast reconstruction and their trust in health care professionals. These effects were expected to have occurred not only in women with breast cancer who had been given PIP breast implants, but also in those who had undergone other types of breast reconstruction.

The aims of this study were: first to describe the perceived impact of the PIP recall in a prospective cohort of breast cancer women, depending on the type of breast reconstruction undergone, and secondly, to analyze the individual determinants of patient's satisfaction and regrets about breast reconstruction, taking the patients' experience of the initial decision-making process into account.

METHODS

Participants

Participants were selected from two geographically designed cohorts of breast cancer women, the ELIPPSE (Etudes Longitudinales sur l'Impact Psycho-social des Pathologies du Sein ie. Longitudinal Studies on Psycho-social Impact of Breast Diseases) cohorts (N=1357). These cohorts which included women with/without mastectomy were set up to document the effects of breast cancer and its treatment on women's everyday lives.[13-16] Eligible patients for these cohorts were all women with incident primary breast cancer (time period of diagnosis: 2004-2008) aged 18-40 (ELIPPSE 40) or >65 (ELIPPSE 65) living in South-eastern France at the time of their cancer diagnosis. These women have been followed during 5 years after the initial diagnosis with closed questionnaires administered by telephone. Women with distal metastases at diagnosis, serious cognitive deficits, and those unable to answer questionnaires were excluded. Only the women who had a previous mastectomy and who declared a breast reconstruction before March 2010, the time of the PIP recall by the national regulatory agency in France were eligible to participate in this study.[12] This represents a small subset of the overall ELIPPSE cohorts since a minority of the women had a mastectomy and in this group not so many women had a breast reconstruction completed before March 2010. A specific cross-sectional telephone survey was performed on these women after an initial phone call to check the validity of women's declarations (Figure 1).

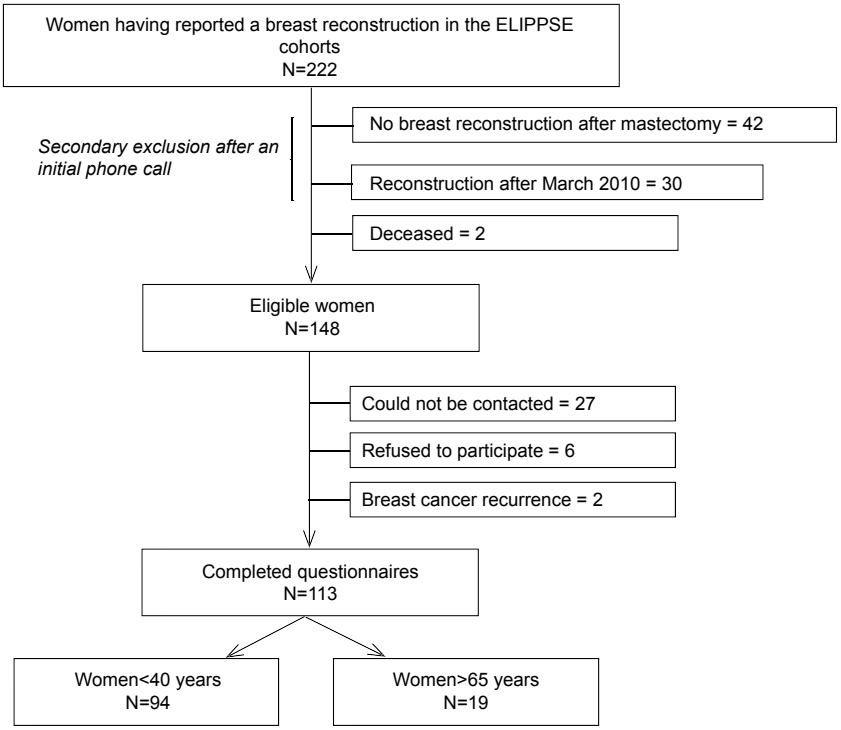

Figure 1: Sample selection pathway.

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Data Collection

Enrolment in the ELIPPSE cohorts resulted in regular scheduled telephone interviews with the women and medical questionnaires sent to the physicians in charge of breast cancer. Details about these cohorts have been published elsewhere.[13-15,17] For this study, it was designed specifically for the women who had a breast reconstruction before the PIP recall a cross-sectional telephone survey based on a closed questionnaire which content is presented below was conducted between June and September 2013 in order to collect details about the type of breast reconstruction, the number of surgeries and the procedure involved.

Sociodemographic (age, educational level, and marital life) and medical data (clinical stage, treatment) were obtained from the ELIPPSE cohorts questionnaires, whereas the variables relating to breast reconstruction and psychosocial characteristics detailed below were collected in the cross-sectional questionnaire. When a French version of a scale had not been validated previously, it was translated following the procedures recommended.[18]

Impact of the PIP Recall

Impact of event scale: The distress generated by the PIP problems was measured using the 15-item Impact of Event Scale (IES).[19] A French translation of this scale had been carried out and validated in previous studies.[17] The women were asked to answer to the questions of their feelings corresponding to the months after they were informed about the PIP problems, i.e. the event was 'the information time about the PIP problems'.

The IES includes two subscales measuring intrusive and avoidance ideation. In this study, both the Global IES score (Cronbach's α=0.91) and the two subscales (intrusive ideation: Cronbach's α=0.88 and avoidance ideation: Cronbach's α=0.82) were measured.

Attendance at a medical centre: Women were asked what they knew about the PIP recall and whether they had been in contact with a medical Centre after hearing about this issue.

Trust in the medical team: Participants were asked whether the PIP recall had affected their trust in the medical team: increased trust/no change/decreased trust.

Women's Decision-Making Characteristics

Type of decision-making: A French version of the Control Preference Scale was used to elicit Breast Cancer patient's preferences about treatment decisions and to determine their perceived involvement in the decision-making about breast reconstruction.[20] This 5-item scale, which has been widely used in studies on cancer patients,[21] includes statements ranging from fully active/passive involvement to fairly active/passive involvement and shared decision-making. Preferred levels of involvement in decision-making were collected on the cohorts, while perceived involvement in breast reconstruction was collected in the cross-sectional survey.

Decisional conflict scale (short form): Patients' decisional conflicts were tested using a 4-item scale, the SURE test.[22] Decisional conflicts were taken to occur in women with a score below 4. Information seeking tendencies were measured using the Extent of Information Desire (EID) scale.[23]

Patient-Reported Outcomes about Breast Reconstruction

Satisfaction was assessed using a 10-point scale ("give a number between 0 and 10 to rate your satisfaction with Breast Reconstruction").

Decisional Regret Scores about Breast Reconstruction were assessed using the Decision Regret Scale.[24]

Data Analysis

Chi2, Fisher's exact tests and Student's t-tests were used to make univariate comparisons. The links between Decisional regret about Breast Reconstruction and other variables were assessed by performing logistic regression. In our analysis Satisfaction with Breast Reconstruction was strongly associated with Breast Reconstruction Decisional regret. This variable was checked to be endogenous (because it may have depended on other predictive variables) by performing the augmented regression test presented by Davidson and McKinnon.[25] As the results confirmed the presence of endogeneity, a simultaneous equations approach based on a two-stage regression procedure was used. In the first stage, instrumental variables were introduced into a linear model to predict Satisfaction about Breast Reconstruction. In the second stage, predicted Satisfaction scores about Breast Reconstruction were introduced into the model for Decisional regret about Breast Reconstruction rather than the actual Breast Reconstruction Satisfaction scores obtained.[26] Adjustments were systematically made for age, level of education and type of Breast Reconstruction. Wald statistics and log-likelihood ratios were used to determine the significance of variables and model fit. Statistical analyses were performed using the STATA/SE 12.1 for Windows program.

Ethics Statement

The study was approved for ethics, consent and confidentiality of the data by the French National Committee on Informatics and Freedom (CNIL N°905296v1, 906277v2).

RESULTS

Sample Characteristics

A total number of 222 women were initially identified for inclusion since they had declared a Breast Reconstruction at

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the time of their initial treatment. However, after the first telephone call, only 148 women were still eligible for our study (Figure 1). Among those not included, two had a recurrence of Breast Cancer, 6 refused to participate and 27 could not be contacted. A total number of 113 questionnaires were therefore available for analysis. No differences were observed between the socio-demographic or medical characteristics of respondents and non-respondents except for their educational level: the respondents included a higher proportion of women who had been educated beyond secondary school certificate level (66% *versus* 42%, p=0.01).

At the initial reconstruction, 90.3% (n=102) had a Breast Implant: 10.6% of them had a PIP Breast Implant (n=12), 79.6% had a Breast Implant other than PIP (n=90) and 9.7% (n=11) had undergone autologous reconstruction (Table 1). These three groups did not differ in terms of their socio-demographic or initial medical characteristics. The mean age was 49 at the time of the interview, and reconstruction had occurred 5.3 years on average before the survey. However, all the PIP implants had been removed by 2013. At least one implant had been removed since the initial treatment for Breast Cancer in 31.1% of the 'other Breast Implants' group.

		Type of reconstruction			
	Total n=113	With PIP implant(s) n=12	With implant(s) other than PIP n=90	Autologous reconstruction n=11	p
	N(%)	N(%)	N(%)	N(%)	
Socio-demographics at cancer diagnosis					
Age, in years (mean(SD))	49(12)	46(10)	49(12)	48(14)	0.687
Level of education >secondary school certificate					
No	62(55.9)	4(33.3)	53(58.9)	5(55.6)	0.246
Yes	49(44.1)	8(66.7)	37(41.1)	4(44.4)	
not specified	2	-	-	2	
Living with a partner					
No	95(84.1)	11(91.7)	73(81.1)	11(100.0)	0.203
Yes	18(15.9)	1(8.3)	17(18.9)	0(0.0)	
Medical characteristics					
Year of diagnosis					
2005	22(19.5)	2(16.7)	19(21.1)	1(9.1)	0.180
2006	25(22.1)	0(0.0)	22(24.5)	3(27.3)	
2007	29(25.7)	4(33.3)	20(22.2)	5(45.4)	
2008	22(19.5)	2(16.7)	18(20.0)	2(18.2)	
2009	15(13.3)	4(33.3)	11(12.2)	0(0.0)	
Clinical stage at diagnosis					
0/I	56(50.0)	8(66.7)	43(48.3)	5(45.4)	0.466
II/III	56(50.0)	4(33.3)	46(51.7)	6(54.6)	
Not specified	1	-	1	-	
Received chemotherapy					
Yes	67(61.5)	6(50.0)	53(61.6)	8(72.7)	0.534
No	42(38.5)	6(50.0)	33(38.4)	3(27.3)	
Missing	4	-	4	-	
Underwent radiotherapy					
Yes	71(66.4)	5(41.7)	58(64.4)	8(72.7)	0.239
No	36(33.6)	7(58.3)	32(35.6)	3(27.3)	
Not specified	6	-	6	-	
Immediate reconstruction					
Yes	43(38.1)	6(50.0)	35(38.9)	2(18.2)	0.273
No	70(61.9)	6(50.0)	55(61.1)	9(81.8)	
Implant removed after being placed					
No	62(60.8)	-	62(68.9)	-	
Yes	40(39.2)	12(100.0)	28(31.1)	-	<.001
Not concerned	11		-	11	
	Mean(SD)	Mean(SD)	Mean(SD)	Mean(SD)	
Time since breast reconstruction, in years	5.3(1.4)	5.9(1.5)	5.3(1.4)	5.0(1.1)	0.332
Number of surgical interventions	4(2)	5(3)	4(2)	4(2)	0.072

Table 1: Socio-demographic and medical characteristics, depending on the type of breast reconstruction – n=113.

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Women's Decision-Making Characteristics

The three groups differed in their preferred involvement in decision-making: the proportion of passive women were higher in the autologous implant group (81.8%), while the proportion of active women were higher in the PIP group. Actual involvement in reconstruction did not differ between the three groups, nor did the congruence between preferred and actual involvement in Breast Reconstruction. Decisional conflict was detected in 62.8% of women, but no significant differences were detected between groups.

The three groups' information-seeking profiles differed slightly: women in the autologous group reported more frequently that they read all they could about their health (72.7%, *versus* 63.6% of the women in the PIP group and 41.4% of those in the other-BI group, p=0.07).

Declared Impact of the PIP Problem

The impact of the PIP problem, based on the overall IES score, and on the intrusion subscale was found to be significantly heavier in the PIP group than in the other groups ($p<0.05$). In the great majority (74.8%), the PIP problem had no consequences in terms of trust in the medical staff. However, 27% of the PIP group reported that their trust had decreased, when compared with 7.9% in the 'other Breast Implant' group (p=0.08). Details are given in Table 2.

At the time of the survey, all the respondents knew about the PIP problems, 100 *via* the media, and 13 *via* a Surgeon/General Practitioner. After this disclosure, 50 declared that they had contacted their Surgeon/GP, 13 that the latter had contacted them, and 32 that they had checked the brand of their implant(s); 11 were not concerned as they had no implants, 7 did not contact their physicians as they were sure of being contacted if there was a problem, and the last woman did not contact her surgeon because she no longer trusted him.

Factors Associated with Satisfaction with Breast Reconstruction

The mean Breast Reconstruction satisfaction score differed significantly between the three groups (Table 2). It was lowest in the PIP group (6 *versus* 7 and 8 in the 'other Breast Implant' group and the autologous reconstruction group, respectively, p=0.006).

In the first stage, multivariate linear regression showed that neither educational level, age nor the number of surgical interventions was significantly associated with the respondents' satisfaction (Table 3). Women who had undergone autologous reconstruction had significantly higher Breast Reconstruction satisfaction scores than those who were given implants. Satisfaction was found to be lower among the less health-literate women and among those with a high information-seeking profile; satisfaction was also lower among those whose trust in the medical profession decreased because of the PIP scandal.

Factors associated with Breast Reconstruction Decisional Regrets

Regrets about their Breast Reconstruction decision were expressed by 57.1% of the respondents, and no significant differences were detected between the three groups. However, 81.8% of the PIP group expressed regrets about Breast Reconstruction, *versus* only 54.4% of the other women (p=0.07).

The results of the second stage in the analysis, which focused on the factors associated with Breast Reconstruction decisional regrets, are given in Table 4, taking the endogeneity induced by the 'satisfaction with Breast Reconstruction' variable into account. After adjusting for age and level of education, regrets about Breast Reconstruction were more frequently observed when the decision-making had not been sufficiently proactive. They also tended to be greater in the PIP group. In addition to these factors, regrets were associated with lower Breast Reconstruction satisfaction scores.

DISCUSSION

This is a first study on the impact of the PIP recall on women who had undergone Breast Reconstruction in south-eastern France, where the PIP scandal was widely publicized. First, the psychological intrusive effects observed in the PIP group were not found to occur in the other groups of women. Secondly, the satisfaction with Breast Reconstruction declared by the participants five years after the initial cancer diagnosis was lower in those whose trust in their health professionals decreased, those who had a Breast Implant, those with the highest information-seeking profiles and those with lower levels of health-related literacy. Thirdly, some regrets about the Breast Reconstruction decision were expressed by a majority of the sample, especially when the decision-making had been less proactive than they would have liked and when they were less satisfied with Breast Reconstruction.

Few studies have been carried out on the psychological impact of the various Breast Implants crises which have occurred during the last thirty years on women undertaking reconstructive surgery. A specific study has been carried out on the PIP scandal in France, not specifically for reconstructive surgery, showing the interconnection of embodied experience and professional and public policy definitions of medical risk through the concepts of moral economy and biological citizenship.[12] Anderson and Larson,[27] who described patients' reactions to the media coverage of the risks associated with silicone Breast Implants in the mid-90's, observed that all the respondents coped with anxiety mainly by consulting their physicians. Among the 102 participants with Breast Implants in this study, 13 were contacted first by their healthcare providers (including all the women with a PIP Breast Implant), whereas 50 had contacted their healthcare

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		Type of reconstruction			
	Total n=113	With PIP implant(s) n=12	With implant(s) other than PIP n=90	Autologous reconstruction n=11	p
	N(%)	N(%)	N(%)	N(%)	
Preferred involvement in decision-making					0.034
Fully/fairly passive	55(50.0)	5(41.7)	41(47.1)	9(81.8)	
Shared decision-making	38(34.6)	3(25.0)	35(40.2)	0(0.0)	
Fully/fairly active	17(15.4)	4(33.3)	11(12.7)	2(18.2)	
Not specified	3	-	3	-	
Actual involvement in decision-making about breast reconstruction					0.488
Fully/fairly passive	20(17..9)	3(27.3)	15(16.7)	2(18.2)	
Shared decision-making	60(53.6)	7(63.6)	46(51.1)	7(63.6)	
Fully/fairly active	32(28.6)	1(9.1)	29(32.2)	2(18.2)	
Not specified	1	1	-	-	
Congruence between preferred and actual involvement					0.524
Less control than they wanted	18(16.5)	3(27.3)	14(16.1)	1(9.1)	
As much control as they wanted	40(36.7)	5(45.4)	32(36.8)	3(27.3)	
More control than they wanted	51(46.8)	3(27.3)	41(47.1)	7(63.6)	
Not specified	4	1	3	-	
Decisional conflict scale					0.334
Decisional conflict	71(62.8)	9(75.0)	57(63.3)	5(45.5)	
No decisional conflict	42(37.2)	3(25.0)	33(36.7)	6(54.5)	
Breast Reconstruction Decisional Regret					0.220
No	48(42.9)	2(18.2)	41(45.6)	5(45.4)	
Yes	64(57.1)	9(81.8)	49(54.4)	6(54.6)	
Not specified	1	1	-	-	
Low health-related literacy. Needed help with reading instructions					0.349
No	95(85.6)	11(100.0)	75(84.3)	9(81.8)	
Yes	16(14.4)	-	14(15.7)	2(18.2)	
Not specified	2	1	1	-	
Effects of PIP scandal in terms of trust					0.164
Greater trust	16(14.4)	1(9.1)	12(13.5)	3(27.3)	
No change in trust	83(74.8)	7(63.6)	70(78.6)	6(54.5)	
Less trust	12(10.8)	3(27.3)	7(7.9)	2(18.2)	
Not specified	2	1	1	-	
I read all I can about my health problems					0.072
No	58(53.2)	4(36.4)	51(58.6)	3(27.3)	
Yes	51(46.8)	7(63.6)	36(41.4)	8(72.7)	
Not specified	4	1	3	-	
	Mean(SD)	Mean(SD)	Mean(SD)	Mean(SD)	
Satisfaction with breast reconstruction score	7(2)	6(2)	7(2)	8(1)	0.006
Not specified	1	-	1	-	
Impact of Event Scale (IES) about the PIP scandal	7(10)	15(13)	6(9)	7(13)	0.025
Not specified	7	1	5	1	
Intrusion Subscale of IES about the PIP recall	4(5)	9(9)	3(4)	4(7)	0.001
Not specified	7	1	5	1	
Denial Subscale of IES about the PIP recall	4(6)	6(7)	4(6)	4(6)	0.390
Not specified	7	1	5	1	
Extent of information desired (EID) score	15(4)	15(5)	15(3)	13(3)	0.538
Not specified	5	1	4	-	

Table 2: Decision-making process about reconstruction and respondents' psycho-social characteristics, depending on the type of breast reconstruction – n=113.

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	Multivariateanalysis	
	ß(sd)	p
Effects of the PIP scandal in terms of trust		
Greater trust / no change in trust	Ref	
Less trust	-2.02(0.67)	0.003
Extentof information desired(EID) score	-0.14(0.05)	0.014
Type of breast reconstruction		
With implant(s) other than PIP	Ref	
With PIP implant(s)	0.20(0.65)	0.755
Autologous reconstruction	1.57(0.66)	0.019
Low health-related literacy. Needed help with reading instructions		
No	Ref	
Yes	-1.23(0.60)	0.043
Number of surgical interventions	-0.17(0.09)	0.073
Level of education		
Secondary school certificate level or lower	Ref.	
Above secondary school certificate level	0.55(0.39)	0.161
Age at diagnosis		
<40	Ref.	
>65	0.46(0.53)	0.391

Table 3: Multivariate linear model for satisfaction about breast reconstruction (n=107).

Multivariate analysis	**IV-logistic[1] model AOR CI(95%) Ref=no regret**	**p**
Satisfaction with breast reconstruction[2]	0.4(0.2-0.8)	0.005
Congruence between preferred and actual involvement		
More control than they wanted or as much control as they wanted	1	
Less control than they wanted	5.3(1.3-22.4)	0.023
Type of breast reconstruction		
With implant(s) other than PIP	1	
With PIP implant(s)	4.5(0.8-25.9)	0.091
Autologous reconstruction	3.6(0.6-20.2)	0.147
Age at diagnosis		
<40	1	
>65	1.8(0.5-7.0)	0.380
Level of education		
Secondary school certificate level or lower	1	
Above secondary school certificate level	0.7(0.4-2.1)	0.761

[1]Instrumental Variable logistic model, taking into account the endogeneity of the respondents' satisfaction about breast reconstruction.
[2]as estimated by performing linear regression at the first stage in the analysis.

Table 4: Factors associated with respondents' decisional regret about breast reconstruction (n=107).

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providers themselves. It is worth noting that 32 of the women did not contact their physicians because they checked the brands of their implants, while 7 did not contact their physicians as they felt sure they would be contacted if there was a problem. The fact that the psychological effects of the PIP recall observed in the PIP group did not occur in the other groups reflects the existence of trust between these patients and their doctors.

Patients' trust in their healthcare providers is a key to the women's satisfaction with the Breast Reconstruction process. Satisfaction with the plastic surgeon has been previously reported to predict greater satisfaction with Breast Reconstruction.[28] In previous studies on satisfaction with Breast Reconstruction, the role of various clinical variables was investigated, and women with autologous reconstruction were found to be more satisfied than those with implants,[29] which was confirmed by the present results. Two other variables analyzed in our study were found to be independently related to satisfaction: higher information-seeking profiles and lower health-related literacy. Higher information-seeking profiles are often detected in people who have been described as "monitors": those who need more information than other people.[30] The association between satisfaction with the information provided and satisfaction with Breast Cancer treatment in general and preoperative information in particular has been documented.[28,31,32] The results obtained here confirm that satisfaction with Breast Reconstruction does not depend directly on women's age or educational level.[29]

Nearly half of young Breast Cancer survivors expressed some regret five years after their treatment;[33] regret about Breast Reconstruction was also observed here in about half of the sample, in line with other studies.[31,32] Post-decisional regrets were observed more frequently in our study when the decision-making was not felt to be sufficiently proactive and in those who were less satisfied with their Breast Reconstruction. The impact of shared decision-making is certainly worth investigating in this context[34,35] with facilitating interventions.[36,37]

The main limitation of our study was that some of the sub-groups, such as the PIP Breast Implant and the autologous Breast reconstruction sub-groups, were very small, which reduced the statistical power of some of the analyses. With higher numbers a statistical significance of the PIP Breast Implant on the decisional regret may be found (Table 4). One of the strength of the study was its geographically based sampling with prospective follow-up of the women at the time of the PIP recall. However if one considers that one third of breast cancer women have a mastectomy and one fourth to half of them have breast reconstruction which is not immediate in most of the times,[1] it was difficult to have a larger number of cases in a regional cohort.

The long-term effects of medical devices are often difficult to predict; however, the recent PIP saga was unique in that it was the only recall resulting from fraudulent procedures. This scandal, which confirmed the need for the regulation of medical devices Europe-wide, therefore had some needed reforms.[9] Satisfaction and regrets are two *a posteriori* decisional indexes, which differ as was seen above. Regrets, which involve looking back at a decision when the outcome is not satisfactory, and participating actively in the initial decision-making are key issues which need to be attended to more closely. In the context of Breast Reconstruction, it is therefore essential to promote the involvement of women with Breast Cancer in the decision-making about mastectomy and to provide them with tailored information and specific interventions when feasible.[36-38]

CONCLUSION

The PIP recall did not appear to disturb women with non-PIP types of Breast Reconstruction in the context of this French regional cohort study. Involving women routinely in the initial decision-making process about Breast Reconstruction as much as they would like is likely to prevent the occurrence of subsequent regrets if it turns out that the final reconstruction does not meet their initial expectations. Promoting systematic large geographically-based data collections to obtain specific medical and psycho-social information may be an option to have up-to-date and representative data to measure the eventual psychological, social, and medical side-effects of new medical devices at a population level.

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CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

REFERENCES

1. Jagsi R, Jiang J, Momoh AO, et al. Trends and variation in use of breast reconstruction in patients with breast cancer undergoing mastectomy in the United States. *J Clin Oncol.* 2014; 32(9): 919-926. doi: 10.1200/JCO.2013.52.2284

2. Brennan ME, Spillane AJ. Uptake and predictors of post-mastectomy reconstruction in women with breast malignancy-systematic review. *Eur J Surg Oncol.* 2013; 39(6): 527-541. . doi: 10.1016/j.ejso.2013.02.021

3. Albornoz CR, Bach PB, Mehrara BJ, et al. A paradigm shift in U.S. Breast reconstruction: increasing implant rates. *Plast Reconstr Surg.* 2013; 131(1): 15-23. doi: 10.1097/PRS.0b013e3182729cde

4. Gerszten PC. A formal risk assessment of silicone breast implants. *Biomaterials.* 1999; 20(11): 1063-1069. doi: 10.1016/S0142-9612(99)00008-3

5. Berry MG, Stanek JJ. PIP silicone breast implants. *J Plast*

Reconstr Aesthet Surg. 2014; 67(1): 127-128.

6. Berry MG, Stanek JJ. The PIP mammary prosthesis: a product recall study. *J Plast Reconstr Aesthet Surg.* 2012; 65(6): 697-704. doi: 10.1016/j.bjps.2012.02.019

7. Heneghan C. The saga of poly implant prosthese breast implants. *BMJ.* 2012; 344: e306. doi: 10.1136/bmj.e306

8. Latham M. If it ain't broke, don't fix it?: scandals, risk, and cosmetic surgery regulation in the Uk and France. *Med Law Rev.* 2014; 22(3): 384-408. doi: 10.1093/medlaw/fwt033

9. Parvizi N, Woods K. Regulation of medicines and medical devices: contrasts and similarities. *Clin Med.* 2014; 14(1): 6-12. doi: 10.7861/clinmedicine.14-1-6

10. Torjesen I. Intact PIP implants do not need to be removed, European report confirms. *BMJ.* 2013; 347: f6567. doi: 10.1136/bmj.f6567

11. Wazir U, Kasem A, Mokbel K. The clinical implications of poly implant prothese breast implants: an overview. *Arch Plast Surg.* 2015; 42(1): 4-10. doi: 10.5999/aps.2015.42.1.4

12. Greco C. The poly implant prothese breast prostheses scandal: embodied risk and social suffering. *Soc Sci Med.* 2015; 147: 150-157. doi: 10.1016/j.socscimed.2015.10.068

13. Cluze C, Retornaz F, Rey D, et al. Inequality in sentinel lymph node dissection for elderly women with early stage breast cancer: results from a French prospective cohort study. *Journal of Geriatric Oncology.* 2012; 3: 212-219. doi: 10.1016/j.jgo.2012.02.009

14. Cluze C, Rey D, Huiart L, et al. Adjuvant endocrine therapy with tamoxifen in young women with breast cancer: determinants of interruptions vary over time. *Annals of oncology: official journal of the European Society for Medical Oncology/ESMO.* 2012; 23: 882-890. doi: 10.1093/annonc/mdr330

15. Huiart L, Bouhnik A-D, Rey D, et al. Complementary or alternative medicine as possible determinant of decreased persistence to aromatase inhibitor therapy among older women with non-metastatic breast cancer. *PloS One.* 2013; 8: e81677. doi: 10.1371/journal.pone.0081677

16. Huiart L, Bouhnik A-D, Rey D, et al. Early discontinuation of tamoxifen intake in younger women with breast cancer: is it time to rethink the way it is prescribed? *European Journal of Cancer.* 2012; 48: 1939-1946. doi: 10.1016/j.ejca.2012.03.004

17. Julian-Reynier C, Bouhnik AD, Mouret-Fourme E, et al. Time to prophylactic surgery in BRCA1/2 carriers depends on psychological and other characteristics. *Genet Med.* 2010; 12(12): 801-807. doi: 10.1097/GIM.0b013e3181f48d1c

18. Streiner D, Norman G. Health Measurement Scales. 2nd ed. Oxford: Oxford Medical Publications, 1999: 231.

19. Horowitz M, Wilner N, Alvarez W. Impact of event scale: a measure of subjective stress. *Psychosom Med.* 1979; 41(3): 209-218.

20. Degner LF, Sloan JA. Decision making during serious illness: what role do patients really want to play? *J Clin Epidemiol.* 1992; 45(9): 941-950.

21. Pieterse AH, Baas-Thijssen MC, Marijnen CA, Stiggelbout AM. Clinician and cancer patient views on patient participation in treatment decision-making: a quantitative and qualitative exploration. *Br J Cancer.* 2008; 99(6): 875-882. doi: 10.1038/sj.bjc.6604611

22. Legare F, Kearing S, Clay K, et al. Are you SURE?: assessing patient decisional conflict with a 4-item screening test. *Can Fam Physician.* 2010; 56(8): e308-e314.

23. Zwaenepoel L, Bilo R, De Boever W, et al. Desire for information about drugs: a survey of the need for information in psychiatric in-patients. *Pharm World Sci.* 2005; 27(1): 47-53. doi: 10.1007/s11096-005-4696-z

24. Brehaut JC, O'Connor AM, Wood TJ, et al. Validation of a decision regret scale. *Med Decis Making.* 2003; 23(4): 281-292.

25. Davidson R, Mac Kinnon JG. Estimation and inference in econometrics. New York: Oxford University Press; 1993.

26. Avery G. Endogeneity in logistic regression models. *Emerg Infect Dis.* 2005; 11(3): 503-504. doi: 10.3201/eid1103.050462

27. Anderson RC, Larson DL. Reconstruction and augmentation patients' reaction to the media coverage of silicone gel-filled implants: anxiety evaluated. *Psychol Rep.* 1995; 76(3 Pt 2): 1323-1330. doi: 10.2466/pr0.1995.76.3c.1323

28. Ho AL, Klassen AF, Cano S, Scott AM, Pusic AL. Optimizing patient-centered care in breast reconstruction: the importance of preoperative information and patient-physician communication. *Plast Reconstr Surg.* 2013; 132(2): 212e-220e. doi: 10.1097/PRS.0b013e31829586fa

29. Alderman AK, Wilkins EG, Lowery JC, Kim M, Davis JA. Determinants of patient satisfaction in postmastectomy breast reconstruction. *Plast Reconstr Surg.* 2000; 106(4): 769-776.

30. Sheehan J, Sherman KA, Lam T, Boyages J. Association of information satisfaction, psychological distress and monitoring coping style with post-decision regret following breast reconstruction. *Psychooncology.* 2007; 16(4): 342-351.

31. Griggs JJ, Sorbero ME, Mallinger JB, et al. Vitality, men-

ISSN 2380-3940 Open Journal http://dx.doi.org/10.17140/WHOJ-1-111

tal health, and satisfaction with information after breast cancer. *Patient Educ Couns.* 2007; 66(1): 58-66. doi: 10.1016/j.pec.2006.10.008

32. Zhong T, Hu J, Bagher S, et al. Decision regret following breast reconstruction: the role of self-efficacy and satisfaction with information in the preoperative period. *Plast Reconstr Surg.* 2013; 132(5): 724e-734e. doi: 10.1097/PRS.0b013e3182a3bf5d

33. Fernandes-Taylor S, Bloom JR. Post-treatment regret among young breast cancer survivors. *Psychooncology.* 2011; 20(5): 506-516. doi: 10.1002/pon.1749

34. Platt J, Baxter N, Jones J, et al. Pre-consultation educational group intervention to improve shared decision-making in postmastectomy breast reconstruction: study protocol for a pilot randomized controlled trial. *Trials.* 2013; 14: 199. doi: 10.1186/1745-6215-14-199

35. Winters ZE, Benson JR, Pusic AL. A systematic review of the clinical evidence to guide treatment recommendations in breast reconstruction based on patient- reported outcome measures and health-related quality of life. *Ann Surg.* 2010; 252(6): 929-942. doi: 10.1097/SLA.0b013e3181e623db

36. Harcourt D, Griffiths C, Baker E, Hansen E, White P, Clarke A. The acceptability of PEGASUS: an intervention to facilitate shared decision-making with women contemplating breast reconstruction. *Psychol Health Med.* 2015: 1-6.

37. Sivell S, Edwards A, Manstead AS, et al. Increasing readiness to decide and strengthening behavioral intentions: evaluating the impact of a web-based patient decision aid for breast cancer treatment options. *Patient Educ Couns.* 2012; 88(2): 209-217. doi: 10.1016/j.pec.2012.03.012

38. Sun CS, Cantor SB, Reece GP, et al. Helping patients make choices about breast reconstruction: a decision analysis approach. *Plast Reconstr Surg.* 2014; 134(4): 597-608. doi: 10.1097/PRS.0000000000000514

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Research

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Risk Factors and Barriers to Male Involvement in the Choice of Family Planning Methods in the Buea Health District, South West Region, Cameroon: A Cross-Sectional Study in a Semi-Urban Area

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ABSTRACT

Background: Family Planning (FP) promotion and services are often focused on women, but nonetheless men have an important role to play also. Engaging men in family planning programs and services has the potential to improve the use of FP methods, increase healthy pregnancy timing and child spacing, and improve on the overall health of the community. It may also facilitate decision-making by men and their partners in reproductive health matters that include FP.

Objectives: The aim of this study is twofold; to 1) determine the risk factors associated with male involvement in the choice of FP methods; and 2) describe the perceived barriers to male involvement in family planning.

Methods: We conducted a cross-sectional, community-based study among men in the Buea Health District (BHD). The multistage sampling technique was used to select four health areas and twenty communities. Eligible participants were selected by consecutive and convenient sampling and were administered a structured questionnaire to measure their involvement in the choice of FP methods. Socio-demographic and reproductive characteristics of participants were obtained; and so were communication factors and barriers in FP. The logistic regression model was used to determine the factors associated with male involvement. Statistical significance was set at $P<0.05$.

Results: A total of 292 men participated in this study, more than half (57.2%) of whom were involved in the choice of FP methods. Factors affecting the choice of FP methods were men's age ((adjusted Odds Ratio (aOR)=0.35; 95% Confidence Interval (CI): 0.12-0.86; P=0.042)), knowledge level (aOR=2.62; 95% CI: 1.50-4.58; P=0.001), educational level (aOR=2.45; 95% CI: 1.10-5.48; P=0.029), partners level of education (aOR=2.37; 95% CI: 1.12-5.02; P=0.024) and birth spacing between partners last two deliveries (aOR=3.14; 95% CI: 1.48-6.68; P=0.003). The identified barriers to male involvement were financial constraints (lack of money), conception difficulties, inadequate information on FP methods, tradition, unskilled healthcare providers, weight gain by partners, and desire for large family size.

Conclusion: This study revealed that men in the BHD were highly involved in FP. Their age, level of education, FP knowledge level, partner's level of education, and birth spacing between partner's last two deliveries were among the factors that influenced male involvement in FP. Identified barriers to male involvement in FP methods were lack of money to pay for FP meth-

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ods, conception difficulties of their partners, inadequate information on FP, desire for large family sizes, tradition, unwanted weight gain (side effect of female contraceptive methods), and unskilled health care providers.

KEYWORDS: Male involvement; Family planning; Buea Health District; Cross-sectional study.

ABBREVIATIONS: FP: Family Planning; aOR: adjusted Odds Ratio; CI: Confidence Interval; IRB: Institutional Review Board; SD: Standard Deviation.

INTRODUCTION

Family Planning (FP) is one of the main interventions required to improve on sexual and reproductive health choices of individuals and communities. It enables individuals and couples to have a healthy sexual life by deciding freely on the number of children they want and when they want them.[1,2]

The global use of contraceptives has increased slightly, from 54% in 1990 to 57% in 2012. In Asia, 62% of the women use contraceptives; in Latin America and in the Caribbean, the figure has gone from 64% to 67%. In Africa, the use of contraceptives remains very low; it went from 23% in 2008 to 24% in 2012.[3] In Cameroon in particular, the rate increased from 16.1% in 1991 to 23.4% in 2011.[4] This low uptake has been due to negative perceptions regarding FP among men (a woman's problem, time consuming, meant for prostitutes, lack of enough family planning clinics and expenses to pay for FP activities). Furthermore, FP is not much embedded in their culture.

The proportion of male participation varies across countries. This proportion is higher in more developed countries where it stands at approximately 63.2%,[3] and lower in sub-Saharan Africa where it ranges from 4.8%[4] to 40%.[5]

In Africa, and particularly so in Cameroon, men believe FP to be the woman's responsibility, with their own role being limited to making financial contributions towards its pursuit.[2,6] This explains why male contraceptive methods are few and for the most part unknown to would-be users. Even among those who use them, most complain of lack of satisfaction with the method. Majority of men complain of not having adequate sexual pleasure with the condom. The situation is not made any better by fear of side effects of female methods. To these inhibiting factors must be added poor access to family planning services,[7] men-unfriendly FP services, unwelcoming healthcare workers, preference for large family sizes, religious sanctions, lack of finances, and long waiting times at FP clinics.[6]

The aim of this study is twofold: 1) to determine the risk factors associated with male involvement in the choice of Family Planning methods; and 2) to describe the perceived barriers to male involvement in family planning.

MATERIALS AND METHODS

Study Design

This was a cross-sectional, community-based study carried out during the period 20th April to 16th May 2015.

Study Area and Setting

The Buea Health District, with an estimated population of 147, 891 inhabitants, is one of the eighteen Health Districts in the South West Region. It has seven health areas, each made up of a number of communities or quarters. It is from these communities, sixty-seven of them in all, that the study participants were enrolled.

Study Population and Sampling

Study population: This was made up of men aged 21 and above, in the Buea Health District in the South West Region of Cameroon.

Sample size calculation: The statistical software Epi info version 7.1.3.0 was used to calculate the sample size using the one proportion formula. The proportion (p) for male involvement in family planning was assumed to be 18% (p=0.18) from a previous study[8]; 95% CI and 5% tolerable error and design effect of 1.5 for multistage sampling from previous study.[3] Therefore, using the formula,[9] we obtained a calculated minimum sample size of 340 participants needed for study.

Sampling method: Multistage sampling was conducted in four stages to obtain the desired number of participants.

There are seven health areas in the Buea Health District: Bokwango, Bova, Buea Road, Molyko, Muea and Tole. Molyko was excluded from this study because the majority of its population are university students, who are not very stable for follow-up and are dependent on their parents for subsistence.

Stage 1: Four out of six Health Areas were randomly selected from the District, without replacement.

Stage 2: Using simple random sampling, five communities were selected within each Health Area. This amounted to twenty communities from which data was collected.

Stage 3: Seventeen households were then conveniently chosen from each community

Stage 4: Lastly, one eligible respondent was chosen from each household.

Eligibility criteria: The participants included in this study were men aged 21 years of age or older, with at least a partner, and who freely consented to be part of the study. Participants were expected to have spent at least the past six months in the health area.

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Exclusion criteria: Participants who had not spent the past six months in a particular household were not eligible; nor were those who did not approve of the study.

Study Procedures

Administrative approvals were obtained from the Faculty of Health Sciences, University of Buea, the South West Regional Delegation of Public Health, and from the Buea Health District. Ethical approval was obtained from the Institutional Review Board (IRB) of the Faculty of Health Sciences, University of Buea.

Informed consent was obtained from participants. The data was collected using a structured questionnaire.

Participant recruitment: Once in the households, adequate information on the study was given to the household members and only one eligible participant was selected from each household.

Interview: After written informed consent was obtained from the participant, data was collected using a structured questionnaire. The data collected focused on factors associated with male involvement in the choice of FP methods (socio-demographic, reproductive and communication factors) and on barriers to male involvement. The questionnaire was both self and interviewer administered.

Data Management and Analysis

The questionnaire was in the English language and contained information on male involvement, knowledge of FP, socio-demographic details, and reproductive and communication variables. The data collected was checked on a daily basis for completeness and accuracy after having been transformed into electronic readable versions, and after specific codes and names had been assigned to the variables. All missing data were entered as "missing". Data was backed up in an external hard drive for safety.

Data collected was entered into Microsoft Access (MS) access interface on Epi-info version 7.1.3.0. The statistical analysis was done using STATA version 10 (STATA corps, Texas USA). The questions aimed for both quantitative and qualitative data. Continuous variables were described using means, medians, standard deviations and interquartile ranges. Absolute and relative frequencies were used to describe categorical variables and were reported as such.

The following three categories of factors associated with male involvement in the choice of family planning methods were studied:

- **Socio-demographic factors:** Age, education level, religion, marital status, employment status, age of partner, level of education and employment status of partner.
- **Reproductive factors:** Current number of living children, duration of birth spacing, desired number of children, and current use of any family planning methods.
- **Communication factors:** Discussion of family planning methods, approval of its use.

The categorical variables were described using numbers and proportions while continuous variables were described using mean, Standard Deviation (SD), median and range.

To assess the factors associated with male involvement, selected variables from socio-demographic factors (age, education level, employment status, age of partner, education level of partner and employment status of partner), reproductive factors (current living children, desired number of children and birth spacing), and FP knowledge level were analyzed. For categorical variables, the proportion of men who were highly involved in the choice of FP methods in each category of the factors was indicated. These proportions were compared using Chi-square test or Fischer's exact test where appropriate. Also, Odds Ratio (ORs) and 95% CI were reported. For continuous variables, the mean, SD or range for men whose involvement is high or low was indicated. The means were compared using the Student t-test. Statistical significance was set at $P<0.05$.

Furthermore, the association between the predictors (men's age, level of education, employment status, age of partner, level of education of partner, employment status of partner, current living children, the desired number of children, birth spacing and FP knowledge) and men who were highly involved in the choice of FP methods was computed to get the adjusted odds ratio and 95% CI. Statistical significance was set at $P<0.05$.

To describe the perceived barriers of male involvement in family planning a qualitative data were used where participants gave their opinion about the barriers to their participation in family planning. These barriers were grouped into the following three categories: 1) individual barriers, 2) healthcare provider's barriers, and 3) health facility barriers. The frequencies and percentages for each category were reported.

Ethical Considerations

Participants were given adequate information, and in return informed consent was obtained from them. Participation was voluntary and participants were free to withdraw at any time. To ensure confidentiality, participants were identified by codes rather than names. Findings provided information on the factors that aided or hindered men's participation in the choice of FP methods. This information is intended to contribute in improving male participation in FP programs, with particular focus on the use of contraceptive methods. No invasive procedures were used, except that some of the questions asked were considered by respondents to be too indiscrete. However, they had the option not to respond to questions that they deemed too personal.

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RESULTS

Of the 340 questionnaires distributed in the four health areas of the Buea Health District, only 292(85.9%) were returned, and in the following proportions: Muea health area, 76 out of 102(74.5%); Buea town health area, 72 out of 85(84.7%); Buea road health area, 80 out of 85(94.1%); and Bokwango health area, 64 out of 68(94.1%).

Socio-Demographic Characteristics of Participants

Table 1: A total of 292 persons participated in this study. Male participants were older than their partners, with mean ages of 35.3 and 29.6 years respectively. The level of education was fairly equally distributed among the men and their partners, with the highest levels being secondary education (43.8% for men and 44.9% for their partners). Illiteracy was very low, 3.08% for men and 7.53% for their partners. As many as 43.2% of the men were self-employed and 41.6% of their partners were unemployed. Many of the men were monogamously married (45.9%) while 6.2% of them were married in a polygamous union. A high proportion of the participants, 89.7%, were Christians.

Reproductive Characteristics of Respondents

Table 2: The median birth spacing between their partners' last two childbirths was 3.5 months (interquartile range: 0 to 72 months). The mean of current living children was 2.6 children (range 0 to 16 children). The number of children desired by the participants ranged from 0 to 22 children, with a mean of 4.9 children.

Characteristic	Level	Frequency (n)	% or Mean (SD)	Median	Range or IQR
Age of man (years)		292	35.3(11.5)	32	21-70
Age of partner (years)		292	29.6(9.88)	26	16-60
Education of man	None	9	3.1		
	Primary	49	16.8		
	Secondary	128	43.8		
	Tertiary	106	36.3		
	Total	**292**	**100**		
Education of partner	None	22	7.5		
	Primary	57	19.5		
	Secondary	131	44.9		
	Tertiary	82	28.1		
	Total	**292**	**100**		
Employment status of man	Unemployed	70	24.0		
	Employed	96	32.9		
	Self employed	126	43.1		
	Total	**292**	**100**		
Employment status of partner	Unemployed	121	41.6		
	Employed	54	18.6		
	Self employed	116	39.9		
	Total	**292**	**100**		
Marital status	Single with partner	107	36.6		
	Married monogamous	134	45.9		
	Married polygamous	18	6.2		
	Living with partner	33	11.3		
	Total	**292**	**100**		
Religion	None	19	6.5		
	Christian	261	89.7		
	Islam	11	3.8		
	Total	**292**	**100**		

Table 1: Socio-demographic characteristics in 292 men involved in the choice of family planning methods in the Buea Health District.

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Characteristic	Frequency (n)	% or Mean (SD)	Median	Range or IQR
Birth spacing (months)	292	15.5(19.2)	3.5	0-72
Current living children	292	2.6(2.9)	2	0-16
Desired number of child(ren)	292	4.9(2.8)	4	0-22

Table 2: Reproductive health characteristics of 292 men in the Buea Health District.

Factors Associated with Male Involvement in the Choice of Family Planning Methods

Table 3: Men with adequate FP knowledge were 3.06 times more likely to take greater interest in male involvement in the choice of FP methods (OR: 3.06: 95% CI: 1.87-5.0). Also, male participants aged 35 or less (OR: 2.7; 95% CI: 1.7-4.4), men in monogamous or polygamous unions (OR: 0.45; 95% CI: 0.27-0.74) and whose partners were aged 30 or more (OR: 0.48; 95% CI: 0.30-0.79) were also more likely to take greater interest in the choice of FP methods. Men who had attained secondary or tertiary levels of education (OR: 5.94; 95% CI: 3.07-11.5), and whose partners had attained similar levels (OR: 6.01; 95% CI: 3.38-10.7) were also more likely to show greater involvement in the choice of FP methods. Finally, participants who desired to have more than five children (OR: 0.30; 95% CI: 0.18-0.52) or already had more than five children (OR: 0.16; 95% CI: 0.08-0.33) were also more likely to demonstrate higher levels of involvement.

After adjusting for the other factors, it was found that men's involvement in the choice of FP methods was determined largely by their age, FP knowledge, educational level, their partner's educational level, and the birth spacing between their partner's last two births.

After controlling for other factors, it was realized that men with higher FP knowledge were 2.62 times more likely to be involved in the choice of family planning methods (OR 2.62: 95% CI; 1.50-4.6, *P*=0.001).

After adjusting for confounders, men with secondary or tertiary levels of education had 2.5 times higher levels of involvement in the choice of FP methods than those who were uneducated or with primary levels of education (OR 2.5: 95% CI: 1.10-5.5, *P*=0.03).

After controlling for other factors (OR: 2.4; 95 % CI: 1.12-5.02, *P*=0.024), it was found that men whose partners had at least secondary or tertiary level of education were 2.4 times more likely to have higher levels of involvement in the choice of FP methods than those whose partners had no, or only, primary education. Equally, the odds against men demonstrating higher levels of involvement in the choice of FP methods increased 2.9 times for every year's increase in men's age (OR 2.9; 95% CI: 0.12-0.96, *P*=0.042).

In conclusion, after controlling for other factors, the odds against men demonstrating greater involvement in the choice of FP was 3.14 times higher for every month's increase in the interval between their partner's last two deliveries (OR: 3.14; 95% CI: 1.5-6.7, *P*=0.003).

Barriers to Male Involvement in the Choice of Family Planning Methods

The identified barriers to male involvement were gathered into three sub-groups: 1) individual, 2) healthcare provider, and 3) health facility related barriers.

Table 4: More than half (59.9%) of the participants did not provide any reasons which hindered them from involvement in the choice of FP methods while 40.1% provided reasons for their low involvement. 9.3% evoked financial constraints in the purchase of contraceptives as a barrier while 1.4% reported the unfriendliness of healthcare providers.

DISCUSSION

Involving men in FP is another way of obtaining their commitment to the improvement of its methods. This study provides information on the factors that aid or hinder men's participation in FP. For men to be more involved in FP and other reproductive health services, they require adequate information. Some participants felt they did not have adequate information on FP services. Even so, their overall involvement was good and would have been better still if they had been better informed.

Factors Associated with Male Involvement

Among the study population in the Buea Health District, age was a significant factor in men's involvement in the choice of FP methods. More than half (66.7%) of the men aged 35 years or younger demonstrated higher levels of involvement in the choice of FP methods, meaning that younger men were more likely to participate in FP. This result differs from those of other studies which report higher levels of involvement in men aged 35 years and older.[5,10-13] Currently, many more young men are educated; as such they have access to information from sources like the internet, radio, TV, and even from their partners. Men aged 35 and less were more represented in this study than those aged 36 and more. Besides, younger men were more willing to participate in the study. This picture explains the FP bias in favor of younger participants.

We also found, as have others,[5,14] that men with ade-

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Characteristics	N	Male involvement						
		%	Unadjusted OR	95% CI	*p*-value	aOR	95% CI	*p*-value
Knowledge								
Inadequate	161	45.3	1.00	-	-	1.00	-	-
Adequate	131	71.8	3.06	1.87, 5.00	<0.001	2.62	1.50, 4.58	0.001
Marital status								
Single with partner	107	69.2	1.00	-	-			
Married monogamous/ married polygamous/ living with partner	185	50.3	0.45	0.27, 0.74	0.002	0.54	0.25, 1.16	0.113
Education of men								
None/ primary	58	24.1	1.00	-	-	1.00	-	-
Secondary/tertiary	234	65.4	5.94	3.07, 11.5	<0.001	2.45	1.10, 5.48	0.029
Education of partners								
None/ primary	79	26.6	1.00	-	-	1.00	-	-
Secondary/tertiary	213	68.5	6.01	3.38, 10.7	<0.001	2.37	1.12, 5.02	0.024
Employment status of men								
None	70	64.3	1.00	-	-	1.00	-	-
Employed/self employed	222	55.0	0.68	0.39, 1.18	0.170	1.09	0.54, 2.20	0.185
Employment status of partners								
None	121	60.3	1.00	-	-	1.00	-	-
Employed/self employed	170	54.7	0..79	0.49, 1.27	0.340	0.89	0.48, 1,65	0.712
Age of men(years)								
36 years and more	115	42.6	1.00	-	-	1.00	-	-
35 years and less	177	66.7	2.69	1.66, 4.37	<0.001	2.88	1.04, 8.03	0.042
Age of partners(years)								
30or less	191	63.4	1.00	-	-	1.00	-	-
More than 30	101	45.5	0.48	0.30, 0.79	0.004	1.87	0.67, 5.25	0.231
Current living children								
5 or less	243	64.2	1.00	-	-	1.00	-	-
More than 5	49	22.5	0.16	0.08, 0.33	<0.001	0.45	0.14, 1.40	0.167
Desired number of children								
5 or less	212	65.1	1.00	-	-	1.00	-	-
More than 5	80	36.3	0.30	0.18, 0.52	<0.001	0.78	0.33, 1.83	0.564
Birth spacing (months)								
12 or less	170	55.3	1.00	-	-	1.00	-	-
More than 12	122	59.8	1.20	0.43, 0.75	0.439	3.14	1.48, 6.68	0.003

Table 3: Association of knowledge, socio-demographic and reproductive characteristics with male involvement in the choice of FP methods in 292 men in the Buea Health District.

quate knowledge about the FP scheme were more likely to be involved in the choice of its methods. When men have proper knowledge of FP methods, they are more willing to participate in choosing a suitable method for use with their partners. Men learn through their involvement; for example, when they accompany their partners to a FP clinic, they gain knowledge of the risks of closely-spaced births (12 months and less) on the mother and child, especially during childbirth. Men with adequate knowledge of FP are more likely to use contraceptive methods and to encourage their partners to do likewise, thereby combating maternal mortality.

The educational level of men also plays a significant role in their involvement in FP. This study revealed that men who had secondary or tertiary level of education were more likely to be more involved in FP than men who were uneducated or had only the primary level of education. This result compares with those of other studies conducted in Nigeria, Bangladesh, Papua New Guinea and Nepal where men who were uneducated or had primary level of education were likely to have a more conservative perception towards FP.[3,5,15-18] Educated men are more likely to have good knowledge of FP which can enable them to make informed decisions on the benefits and risks of FP methods. Uneducated men, on the other hand, often have misconceptions about FP methods, especially with regards to side effects. These misconceptions are usually the cause of low male involvement

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Barriers	Frequency (N)	Percentage (%)
Individual barriers		
Infertility or conception difficulty of partners	21	7.2
Inadequate information on FP methods	24	8.2
Ignorance	7	2.4
Time constraint	7	2.4
Tradition and custom	19	6.5
Financial constraint	27	9.3
Not yet attain desired family size	10	3.4
Weight gain of their partners	17	5.8
Having sex with no pleasure when using the male condom	6	2.1
Health care provider barrier		
Unskilled health care providers	17	5.82
Health care provider not user friendly	4	1.37
Health facility barrier		
Health facility not accessible	20	6.85

Table 4: Barriers to male involvement in the choice of Family Planning (FP) methods.

in FP services. Providing adequate information to men who have no, or only, primary education can change their views of FP and so boost their involvement. This proposition was not verified by a study conducted in Nepal which instead reported that men with no formal education or with only primary level of education had greater involvement in reproductive and sexual health services.[13] Whilst focus is on women's education (and rightly so) in improving health outcomes, men's educational level is equally important as it enables them to access information relevant to health.

Women's level of education was also seen to be a strong factor in their husband's or partner's involvement in FP. Our findings suggest that women who are educated facilitate their partner's involvement in their health issues and in those of their children. Other studies also found an association between women's educational level and male involvement in FP and other related issues.[5,14,18]

Birth spacing was also discovered to be significantly associated with male involvement in FP. Men whose partner's interval between the last two deliveries was 13 months and more demonstrated higher levels of involvement in FP. However, the studies reviewed did not report this association; rather, they reported the current number of living children and the desire for more than five children to be associated with men's participation in FP.[3,7,11,15,18,19]

While men's marital status, their partner's age, the current number of living children and the desire for 5 children and more determined their level of involvement in the bivariate analysis, these same factors were not determining when the other factors were taken into account in the multivariate analysis.

Barriers to Male Involvement in Family Planning

The barriers to male participation vary across countries because of differences in customs and traditions. The identified barriers to male involvement were financial constraints (9.3%) and inadequate information on FP methods (8.2%). This picture is similar to findings in Nigeria, Ghana, Democratic Republic of Congo (DRC) and Ethiopia.[3,4,20,21] Some modern female FP methods are expensive and therefore tend to dissuade men from being involved. Also, since some men are ignorant or do not have adequate information about FP, their involvement is affected to the same extent. Some participants reported that they are not involved in FP because their customs and tradition do not permit them to be. They claim that FP in their culture is a woman's activity and so they do not see any reasons why they should be involved. Besides, their preference for large family sizes makes it difficult for them to support any methods that challenge such interests. Studies in other countries have shown participants reporting that large family sizes are intrinsic to their culture and that their only obligation to women concerning FP is the provision of money.[3,4,6,8,22] Other participants reported that when their partners use FP methods they later have side effects like difficulties to conceive, and unwanted weight gain; and that when they use condoms they do not derive sexual satisfaction. These findings have also been reported in studies conducted in Uganda and Kenya.[6,23] Some participants reported that they do not have time to accompany their partners to the FP clinic or to discuss FP with them because they are busy looking for money to take care of the family. These findings are similar to those in studies carried out in Uganda.[6]

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Among some of the barriers caused by healthcare providers and health facilities were the unfriendliness of health care providers, their poor skill, and in some areas difficulty in accessing healthcare facilities. These findings are corroborated by other studies.[4,21,22,24]

Study Limitations

This study was done in four health areas in the Buea Health District in the South West Region of Cameroon. The BHD is only one in 18 Districts in the Region. There may therefore be need to conduct a larger survey, for example in all the Health Districts in the South West Region, and in other parts of Cameroon. Also, the sample may not be representative enough of the population of men in the South West Region and in Cameroon as a whole. There is also the problem of recall bias as many of the participants could not give the correct intervals between their partner's last two childbirths. Furthermore, since this study is a cross-sectional study, it may also limit the ability to establish relationships between the predictors (age of man, education level of man, employment status of man, age of partner, education level of partner and employment status of partner, current living children, desired number of children, birth spacing and knowledge) and men who were highly involved in the choice of FP methods. These limitations should be considered when interpreting the results.

There are a number of strengths to this study. The Buea health district is made up of urban and rural communities. Focus on men from both communities in this study provides valuable insights into their involvement in FP, their knowledge on FP methods, and its determinants. These insights will help inform the policies and programs targeting increased male involvement in FP programs. Qualitative data on barriers to male involvement added insights into factors which hinder male participation in FP. This data will provide information on how to overcome barriers to increased male involvement.

Conclusion

Men may not benefit directly from safe motherhood services, but their partners need their understanding and support to have access to basic reproductive health services. Men's involvement, therefore, remains a major determinant in all FP initiatives. The level of male involvement in this study was high, and was driven, among other factors, by age, level of education, level of FP knowledge, partner's level of education, and birth spacing between their partner's last two deliveries. Some of the obstacles to male involvement were financial constraints, conception difficulties, inadequate information on FP, desire for large family sizes, tradition, side effects of female methods (unwanted weight gain for example) and unskilled and/or unfriendly health care providers. Men and women have equal responsibility in their reproductive health condition and should make joint decisions in FP methods.

Recommendations

Male involvement in sexual and reproductive health services, especially in FP, is crucial in boosting FP methods among men and their partners. FP programs should, therefore, be designed to strengthen and incorporate the responsibility and role of men in the practice of FP services. Furthermore, community health education sessions should be organized to provide communities with adequate information on FP services.

We also recommend that the FP services be made more male friendly to address men's sexual and reproductive health needs.

COMPETING INTERESTS

The authors declare that they have no competing interests.

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REFERENCES

1. Darroch JE, Singh S. Trends in contraceptive need and use in developing countries in 2003, 2008, and 2012: an analysis of national surveys. *The Lancet.* 2013; 381: 1756-1762. doi: 10.1016/S0140-6736(13)60597-8

2. Kelodjouea S. Trends and determinants of unmet need for family planning in Cameroon: the role of socio-cultural context. *Sociology.* 2015; 5: 39-52. doi: 10.17265/2159-5526/2015.01.005

3. Kassa M, Abajobir AA, Gedefaw M. Level of male involvement and associated factors in family planning services utilization among married men in Debremarkos town, Northwest Ethiopia. *BMC Int Health Hum Rights.* 2014; 14. doi: 10.1186/s12914-014-0033-8

4. Adelekan A, Omoregie P, Edoni E. Male involvement in family planning: challenges and way forward. *Int J Popul Res.* 2014; 2014: 1-9. doi: 10.1155/2014/416457

5. Kamal MM, Islam MS, Alam MS, Hasssn ABME. Determinants of male involvement in family planning and reproductive health in Bangladesh. *Am J Hum Ecol.* 2013; 2.

6. Kabagenyi A, Jennings L, Reid A, Nalwadda G, Ntozi J, Atuyambe L. Barriers to male involvement in contraceptive uptake and reproductive health services: a qualitative study of men and women's perceptions in two rural districts in Uganda. *Reprod Health.* 2014; 11: 21. doi: 10.1186/1742-4755-11-21

7. Dahal GP, Padmadas SS, Hinde PRA. Fertility-Limiting be-

havior and contraceptive choice among men in Nepal. *Int Fam Plan Perspect*. 2008; 34: 6-14. doi: 10.1363/ifpp.34.006.08

8. Nkuoh GN, Meyer DJ, Tih PM, Nkfusai J. Barriers to men's participation in antenatal and prevention of mother-to-child hiv transmission care in Cameroon, Africa. *J Midwifery Womens Health*. 2010; 55: 363-369. doi: 10.1016/j.jmwh.2010.02.009

9. Landau S, Stahl D. Sample size and power calculations for medical studies by simulation when closed form expressions are not available. *Stat Methods Med Res.* 2013; 22: 324-345. doi: 10.1177/0962280212439578

10. Saurina C, Vall-llosera L, Saez M, et al. Factors determining family planning in Catalonia. Sources of inequity. *Int J Equity Health.* 2012; 11: 35. doi: 10.1186/1475-9276-11-35

11. Roberts E, Metcalfe A, Jack M, Tough SC. Factors that influence the childbearing intentions of Canadian men. *Hum Reprod.* 2011; 26: 1202-1208.

12. Kisa S, ZeyneloğLu S, Delibaş L. Influence of age on the usage of family planning methods by Turkish married men living in southeastern Turkey. *Turk J Med Sci.* 2013; 43: 756-763. doi: 10.3906/sag-1209-73

13. Bhatta DN. Involvement of males in antenatal care, birth preparedness, exclusive breast feeding and immunizations for children in Kathmandu, Nepal. *BMC Pregnancy Childbirth*. 2013; 13: 14. doi: 10.1186/1471-2393-13-14

14. Frances A, Myo Myo M, Kyu Kyu T, et al. Correlates of male involvement in maternal and newborn health: a cross-sectional study of men in a peri-urban region of Myanmar. *BMC Pregnancy Childbirth.* 2015; 15. doi: 10.1186/s12884-015-0561-9

15. Shahjahan M, Mumu SJ, Afroz A, Chowdhury HA, Kabir R, Ahmed K. Determinants of male participation in reproductive healthcare services: a cross-sectional study. *Reprod Health.* 2013; 10: 27. doi: 10.1186/1742-4755-10-27

16. Kura S, Vince J, Crouch-Chivers P. Male involvement in sexual and reproductive health in the Mendi district, Southern Highlands province of Papua New Guinea: a descriptive study. *Reprod Health.* 2013; 10: 46. doi: 10.1186/1742-4755-10-46

17. Aransiola JO, Akinyemi AI, Fatusi AO. Women's perceptions and reflections of male partners and couple dynamics in family planning adoption in selected urban slums in Nigeria: a qualitative exploration. *BMC Public Health*. 2014; 14: 869. doi: 10.1186/1471-2458-14-869

18. Islam MS. Determinants of contraceptive method choice in Bangladesh: male perspectives. *South East Asia J Public Health.* 2014; 3: 50-56. doi: 10.3329/seajph.v3i1.17711

19. Irani L, Speizer IS, Fotso J-C. Relationship characteristics and contraceptive use among couples in urban Kenya. *Int Perspect Sex Reprod Health.* 2014; 40: 11-20. doi: 10.1363/4001114

20. Adongo PB, Tapsoba P, Phillips JF, et al. The role of community-based health planning and services strategy in involving males in the provision of family planning services: a qualitative study in Southern Ghana. *Reprod Health.* 2013; 10: 36. doi: 10.1186/1742-4755-10-36

21. Ditekemena J, Koole O, Engmann C, et al. Determinants of male involvement in maternal and child health services in sub-Saharan Africa: a review. *Reprod Health.* 2012; 9: 32. doi: 10.1186/1742-4755-9-32

22. Morfaw F, Mbuagbaw L, Thabane L, et al. Male involvement in prevention programs of mother to child transmission of HIV: a systematic review to identify barriers and facilitators. *BioMed Cent.* 2013; 2: 5. doi: 10.1186/2046-4053-2-5

23. Ochako R, Mbondo M, Aloo S, et al. Barriers to modern contraceptive methods uptake among young women in Kenya: a qualitative study. *BMC Public Health.* 2015; 15. doi: 10.1186/s12889-015-1483-1

24. Hossain KJ. Male involvement in family planning in Bangladesh: factors constraining low use and the potential for augmenting the CPR. *UN Popul Fund.* 2003.