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MILITARY ENVIRONMENT AND FECUNDITY : A STUDY OF WOMEN IN UNIFORM

Lt Col SK RATH*, Surg Capt (Mrs) P TARNEJA⁺,
Lt Col BS DUGGAL[#], Maj ASHIMA CHAWLA^{**},
Maj P TUGNAIT⁺⁺

ABSTRACT

Fecundity is an area where individual experiences, community belief and anecdotes cloud scientific evidence. It has been a common belief that working women experience various types of subfecundity like infertility, abortion and prolonged waiting time for pregnancy. Work environment may be contributing to this end, besides the delay in starting a reproductive career. Since working women in military environment are exposed to factors like mobility, shift duty, anaesthetic gases etc, it was decided to study their fecundity vis-a-vis housewives of same socio economic status. In this study 204 subjects returned the questionnaire with a response rate of 68%. It was found that higher shades of subfecundity exist among women engaged in military service but does not reach the level of statistical significance ($p > 0.05$) to attribute it to the work environment.

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KEY WORDS : Environment; Fecundity.

Introduction

To procreate is a natural law and fecundity is a measurable outcome. When the epidemiology of fecundity and fertility are studied, different end points of reproduction can be measured [1]. Review of literature reveals only a few proven toxic environmental factors affecting fecundity. Agents associated with adverse reproductive outcome in the work place include chemicals, drugs, gases, heat, cold, and noise [2,3]. Studies of women's occupational health regarding physical work (lifting, walking, standing) indicate effects like spontaneous abortion, low birth weight and preterm birth [4,5].

Time taken to pregnancy (TTP) has been proposed as one of the screening instruments for the measure of fecundity [6,7]. Time taken to pregnancy is defined as the length of time period that takes for a couple to achieve a pregnancy while having unprotected intercourse. Information on this account is achieved by using retrospective questionnaires about the waiting time which shows a reasonable reliability even with recall period of 20 years [8]. This measurement has shown prolonged waiting time associated with various occupational factors [9,10]. Most of the women in military service in our country are in medical and nursing profession. The entry to other branches are gradually opening up. It is known that the job require-

ment in the present setting involves some of the environmental and occupational factors like mobility, shift duties, anaesthetic gases and radiation which may affect fecundity as well as pregnancy outcome.

The aim of this pilot study was to find out if these environmental and occupational factors of service are associated with subfecundity as compared to a reference group of housewives.

Material and Methods

A questionnaire was administered to married women in military service in a large cantonment. They were requested to return the completed questionnaire if willing to participate in the study. The reference group comprised comparable number of housewives of similar socio economic background. The acceptable recall period was kept at 20 years. No personal identification was to be made. The questionnaire sought information on reproductive history with details of first pregnancy. The vital questions were regarding staying together with husband, contraceptive use, waiting time and pregnancy outcome. The total period of contraceptive use was deducted from the total period of staying together to arrive at the TTP.

Results

Questionnaires were sent to randomly selected 150 subjects for study and the same number in the reference group. Total of 204 questionnaires were returned. 106 of them were from women in uniform (Group A) and 98 were from housewives (Group B). Thus, response rate was 68% on the whole, 72% being for service women and 64% for housewives. Two responses from each group were discarded since the total period of waiting was less than 12 months without conception. Thus, data from 104 cases from

*Readers, ⁺Professor, Department of Obstetrics and Gynaecology, Armed Forces Medical College, Pune - 411 040, ⁺⁺Graded Specialist, (Obstetrics and Gynaecology), INHS Kalyani, Gandhigram Post, Vishakapatnam - 530 005, [#]Graded Specialist (Obstetrics and Gynaecology), Military Hospital, Ambala Cantt.

Group A and 96 from Group B was available for analysis.

The background data of the groups has been shown in Table 1. The figures regarding spontaneous conception, conception with treatment or still unresolved infertility are indicated in Table 2. After excluding infertility cases it was seen that 90 women in Group A and 84 in Group B had achieved pregnancy. TTP for these women is shown in Table 3. Table 4 deals with the broad outcome of pregnancy.

TABLE 1
Background of participants

Criteria	Group A n = 106	Group B n = 94
Education		
Post Graduate	18 (16.9%)	20 (21.2%)
Graduate	88 (83.1%)	74 (78.8%)
Undergraduate	-	-
Socio-economic status		
Officers	106	94
Others	-	-
Age at marriage (in yrs)		
Range	23-33	20-32
Mean	26.2	23.1

TABLE 2
Conception

Event	Group A n = 106	Group B n = 94
Spontaneous conception	84 (79.2%)	80 (85.1%)
Conception after treatment	6 (5.6%)	4 (4.2%)
Unresolved infertility	16 (15.2%)	10 (10.7%)

$\chi^2 = 1.17$; $df = 2$; $p > 0.05$

TABLE 3
Time taken to pregnancy (TTP)

TTP in months	Group A n = 90	Group B n = 84
Less than 6	48 (53.3%)	50 (59.5%)
6 to 12	25 (27.9%)	19 (22.7%)
More than 12	17 (18.8%)	15 (17.8%)

$\chi^2 = 0.78$; $df = 2$; $p > 0.05$

TABLE 4
Pregnancy outcome

Event	Group A n = 90	Group B n = 84
Abortion	6 (6.6%)	4 (4.7%)
MTP	1 (0.9%)	1 (0.8%)
Delivery	83 (92.5%)	79 (94.5%)

$\chi^2 = 0.05$; $df = 1$; $p > 0.05$

Discussion

The subjects in the study belong to a highly edu-

cated and upper middle class socio economic group, since the entry for women in Armed Forces of India is restricted to the officers cadre only. Hence, to have a matching reference group with regards to background data, the questionnaire had been administered to only officer's wives for Group B. The average age at marriage between both age groups had a difference. However, maximum number of women in both the groups were exposed to the chances of pregnancy during the ideal period of conception i.e. between 21 to 30 years.

Members of Group A had a lower rate of spontaneous conception. The cumulative conception rate after treatment also remained lower in this group. However, the difference did not reach statistical significance ($p > 0.05$). Unresolved infertility in 15.2% cases is considered high when compared to 10.7% of reference group, but still remained short of statistical significance, ($p > 0.05$). Risk of spontaneous abortion for a primigravida is quoted as 5% [12] hence, the rate of 6.6% of Group A is apparently high. When compared to group B there was an observed difference of 1.7% ($p = 0.55$). The nature of work is not typical desk job and involves physical mobility which can contribute to early pregnancy loss. Jobs involving physical mobility at work place and exposure to cosmic radiation in air leading to higher rate of abortion have been reported [13]. Medical termination of pregnancy for the first conception is extremely rare in married women in India. Only two cases in the present series were for compelling reasons like drug exposure and offending viral infection in the first trimester.

The core issue of TTP is a matter of debate. While studying TTP retrospectively some studies take into account only successful pregnancies [1]. We feel this approach would under sample the most subfecund couple, those experiencing abortion and those who are infertile. Hence, we have taken into account all conceptions, while calculating TTP. When we consider TTP after excluding the cases of unresolved infertility, the subjects in Group A had a longer waiting period. The mean waiting period for Group A was 11.6 months with a range of 2 to 40 months. The corresponding mean period for Group B was 10.8 months with a range of 2 to 38 months. The percentage of subjects who have taken more than 12 months to conceive has also been considered separately, keeping in mind WHO standard maximum expected fecundity in fertile women within that time span. Whereas 18.8% of women in military service had to wait for more than 12 months of unprotected marital relations, this figure was 17.8% for the housewives. This difference however, did not reach the level of statistical significance

($p \geq 0.05$).

To conclude, shades of subfecundity are present among women engaged in military service. These are observed in the form of infertility, abortion and a prolonged waiting period for pregnancy. However, these observed differences do not reach a point of statistical significance when compared to housewives in this pilot study. Large scale broad based epidemiological survey may be helpful for further verification.

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