INTRODUCTION

Recent research in economics suggests that there are various decisive and vital periods for investment in children and pregnancy is likely to be among the most significant ones.\(^1,2\) It seems that although there has been extensive research on various other factors in economic literature such as maternal age, maternal education, family income, maternal smoking and prenatal care, maternal employment has for the most part been ignored.\(^3\)

In the recent years, women have occupied a considerable number of paid positions in the labor market and continue to work even during periods of pregnancies but even though, women form a large part of the labor force, they are being discriminated against at the work place just due to their unique biological ability to bear children. To curb this issue the maternity protection and anti-discrimination legislation has taken various steps internationally against the increasing health and safety concerns related to the participation of females in the working sector especially catering to pregnant women.\(^4\) In Pakistan women comprise more than half the population and thus play a very important role in the Pakistan economy. The female labor force participation (FLFP) has drawn international attention in the past few years over Pakistan due to its development and structure. Although, the female participation rate in Pakistan has risen in Pakistan from 15.9 percent during the period 2003-04 to 18.9 percent during the period 2005-06 but it is still very low compared to other south Asian Countries.\(^5\) At present, Pakistan has least share of women in labour force that is only 22 percent.\(^6\)

As a largest province in Pakistan, Punjab has 55.54 percent participation of women in labour force as compared to men, which is 81.4 Percent. As a major employing resource, among all the employed in agriculture, 3/4th part is women. Industry and services are among least selected fields of women. In salaried employment, women are claiming 27.7 percent share. 16.5 percent
of women are working as their own account holders.\textsuperscript{7}

All over the world, motherhood is recognized as a phenomenon that is part of their work life at some level. Some women are mothers and some are in process yet others are considered potential mothers. The point to be noted is that all this is happening at a time when women are in active phase of their career as well.\textsuperscript{8}

Many evidences has been collected in Canada about risk conditions that are present in workplaces and many of them have been reported to be potentially harmful to reproductive health of both genders including their ability to have healthy offspring. This harm may only be evident when somebody tries to have a baby and may affect the reproductive functions of a individual in many different ways.\textsuperscript{9}

Reproductive hazards are agents or conditions that result in harm to the reproductive system in adults or impair development in the foetus of resulting children. There are various stages at which exposure of men and women to hazards can affect the reproductive process. It should be noted, however, that the reproductive system in itself is highly complex and its mechanisms are not fully understood. Workplace exposures have the potential to interfere with: male and female hormonal systems, women’s menstrual cycle, development and function of sperm and ova, process of fertilization and implantation, foetal growth and development, and lactation of process.\textsuperscript{10}

Given the number of workers who become pregnant each year, it is surprising how little research has examined the phenomenon of pregnancy at work. Unfortunately, given its rather limited scope, we still know little about pregnancy at work. Perhaps so few scholars have investigated the phenomenon because they simply assume that pregnancy is not important, that the key issues for organizations and workers arise after children are born.

This study will basically focus the problems that are faced by pregnant females at their work place and how these problems affect their health during pregnancy. So here in this study we will try to find a solution to all of these problems.

**OBJECTIVES**

Objectives of this study are:
1. To find out the workplace factors affecting the women at their workplace.
2. To determine the affects of these factors on pregnancy.
3. To find out the association between these factors and complications of pregnancy.

**MATERIAL AND METHODS**

A descriptive, cross sectional study was conducted among teachers of private schools in Lahore, who were teaching to middle and higher secondary section. The teachers who have either undergone or passing though the phase of motherhood were taken by convenient sampling technique. The sample size was estimated using the following formula:

\[ N = \frac{Z^2 \alpha/2 \cdot p (1-p)}{d^2} = N = 240 \]

However to increase the generalizability, more than 500 teachers was taken as participants.

After getting study approved by IRB, in order to lay down a set of factors, which can have any influence on pregnancy, a structured pre tested questionnaire adapted from the qualitative study done in the beginning. Most of the questions were close ended. Participants were approached in their working institutions. A written consent was taken. Women were assured that their confidentiality would be maintained. All the cultural and societal norms were observed at all times during collection of data.

The data was organized, arranged and entered in SPSS software version 24. Descriptive statistics performed to calculate frequency, mean, median and mode, percentage, range and standard deviation. Chi square test was implied to check for significance. P value= >0.05 was used. Binary logistic regression was also applied to assess the correlation between independent and dependent variables.
RESULTS
The results are as follows:

Socio-demographic characteristics of working women
Age is considered one of important factor in determining health of any individual especially in pregnant ladies. Along with this, age at marriage and age of the women at first pregnancy are other vital factors playing part in reproductive health. The results of the study showed that most of our participants were of young age belonging to 21-25 years of age with mean at 23.6 years. Similarly, the average age at marriage was 23.1 years and as women got married earlier, they tend to become pregnant earlier at an average of 23.4 years. Number of children noted was 1-3 with a mean of 2. This can be affected by another factor that is education status of the participants. The education status of the participants was noted to be quite high as nearly 60% had a master degree or above with 35 precents having a bachelor degree. (Table-I)

| Variable             | Frequency | Percentage |
|----------------------|-----------|------------|
| Age (in years)       |           |            |
| <20                  | 86        | 17.1       |
| 21-25                | 240       | 48.1       |
| 26-30                | 122       | 24.3       |
| >30                  | 52        | 10.5       |
| Mean ± SD = 24.67± 4.11 Min= 18 Max= 35 |
| Age at marriage      |           |            |
| 18-25                | 240       | 48         |
| 26-30                | 210       | 42         |
| >30                  | 50        | 10         |
| Mean=23.1, SD=4.2    |           |            |
| Age at first pregnancy|          |            |
| 18-24                | 170       | 34         |
| 25-29                | 318       | 63.6       |
| 30-35                | 12        | 2.4        |
| Mean=23.4            |           |            |
| No of children       |           |            |
| 1                    | 178       | 35.6       |
| 2                    | 265       | 53         |
| 3                    | 57        | 11.4       |
| Mean= 2              |           |            |
| Education            |           |            |
| Higher secondary     | 78        | 15.6       |
| Bachelor             | 168       | 33.6       |
| Master and above     | 245       | 49.0       |
| Mean=14.9, SD = 4.71 |           |            |

Table-I. Characteristics of participants

Medical Facility and Maternity leaves
Table-II gives data regarding medical facilities provided by the institutes to their teachers which showed that only 10.6 precents’ teachers are covered by full medical facility otherwise 57 precents’ got only a part of expenses and 32.4 % did not receive any medical expenses by the organization. Regarding maternity leaves for the pregnant workers, about half of the working ladies were able to have paid maternity leave although only 3 precents’ were getting this for more than 6 weeks and others were getting 4 or 6 weeks only.

| Variable                      | Frequency | Percentage |
|-------------------------------|-----------|------------|
| Medical facility provided by  |           |            |
| Organization                  |           |            |
| Yes. All                      | 285       | 57         |
| Yes. Some                     | 162       | 32.4       |
| No Not at all                 |           |            |
| Maternity Leave paid          |           |            |
| 4 weeks                       | 125       | 25         |
| 6 weeks                       | 115       | 23         |
| >6 weeks                      | 15        | 3          |
| Maternity leave unpaid        |           |            |
| 4 weeks                       | 45        | 9          |
| 6 weeks                       | 185       | 37         |
| >6 weeks                      | 15        | 3          |
| Support from employer during  |           |            |
| pregnancy                      |           |            |
| Supportive                    | 135       | 27         |
| Neutral                       | 165       | 33         |
| Non-supportive                | 200       | 40         |
| Satisfaction regarding        |           |            |
| treatment at workplace during  |           |            |
| pregnancy                      |           |            |
| Satisfied                     | 135       | 27         |
| Neutral                       | 160       | 21         |
| Not satisfied                 | 205       | 41         |
| Job stress level              |           |            |
| High                          | 378       | 75.6       |
| Medium                        | 105       | 21         |
| Low                           | 22        | 4.4        |
| Stress level faced during     |           |            |
| pregnancy                      |           |            |
| High                          | 425       | 85         |
| Medium                        | 75        | 15         |
| Low                           | 0         | 0          |
| Standing hours at job during  |           |            |
| pregnancy                      |           |            |
| >3                            | 82        | 16.4       |
| 4_5                           | 121       | 24.2       |
| >5                            | 297       | 59.4       |

Table-II. Facilities by organization
Mean= 4.1 hours, SD= 2.7

There were another 50 precents’ who were not getting paid maternity leaves at all and among
them 9 precents’ were getting unpaid leave only for 4 weeks and 37 precents’ for 6 weeks.

**Support and job Satisfaction, Standing hours and Stress levels during pregnancy**
The level of support and help provided by the employers at workplace to a new mother matters a lot in productivity level of the female employee.

The data showed that only 27 % participants got desired support from their employers during pregnancy. 33 precents' reported to be neutral and 40 per cents were even found them unsupportive during this crucial phase of their life.

Similarly, finding about the participant’s satisfaction regarding the treatment she got at her workplace followed the same pattern. 41 per cents were unsatisfied with the treatment they received at their workplace. With 27 per cents who were satisfied and 21 per cents showed neutral behaviour regarding this.

As teachers job is to teach students by standing, when asked about the number of hours of standing while they were pregnant, 59.4 % reported of more than 5 hours of continuous standing. Only 16.4 % reported less than 3 hours of standing during pregnancy while on duty.

**Pregnancy**
Most of time the pre-planned pregnancy bring less adverse and negative effects towards workingwomen in contrast to un-planned pregnancy. 84.2 % respondents considered that their pregnancy were pre-planned while 15.8 % respondents state that their pregnancy was unplanned and undecided. Pregnancy demands regular check-ups from the hospitals and clinics on regular basis to avoid any future complications. Regarding the antenatal visits only 5 % participants did not get any antenatal. Almost 95 percents got their antenatal check-ups. Among them, 36 were those who went for their antenatal check for more than even three times. Rest of the working ladies got normally 2 or 3 visits. (Table-III)

Complications during pregnancy were reported by 57.5 % of the working mothers, 46 % of those had backache on regular basis. Other complications reported were 18 % pain in epigastrium, 15.6 % reported UTI’s and 16 % high BP along with 18.4 % who were diagnosed a case of eclampsia. On the other hand, 43 % did not report any complication during pregnancy. The point to be noted was that 57.8 percents working mothers attributed these complications towards their job and 42.1 % thought that it might be due to other reasons.

As far as, negative effects on mental health was concerned, 65 per cents working mothers marked that their mental health was affected negatively in a great deal and 18 % said quite a bit with only 10 precent’s who marked it a little with only 7 % who negated any negative effects of their job (Table-III).

Table-IV shows an association of workplace factors with the complications, working mothers faced during pregnancy. Results showed that distance of workplace from home, stress level of job, stress which participants faced during pregnancy along with support of boss and colleagues and the treatment which participants faced during their pregnancy has association with the development of complications which working mothers faced during their pregnancy.

Table-V gives data about association between the support of employers and colleagues gave to the working mothers during their pregnancy and the mental health of the mothers. This factors showed an association. Similarly how satisfied were women with treatment they have got from their bosses and authorities during their pregnancy regarding workload, appreciation and discrimination in other activities at job place I was also seen to be associated with the mental health of pregnant ladies.
| Variable                                      | Frequency | Percentage |
|----------------------------------------------|-----------|------------|
| Pregnancy (n=500)                            | 421       | 84.2       |
| Planned                                      | 79        | 15.8       |
| Antenatal visits (n=500)                     |           |            |
| Yes                                          | 495       | 99         |
| How many                                     |           |            |
| 2                                            | 120       | 24         |
| 3                                            | 195       | 39         |
| >3                                           | 180       | 36         |
| No                                           | 5         | 1          |
| Complication during pregnancy (n=500)         |           |            |
| Yes                                          | 285       | 57         |
| Pain in epigastrium                          | 90        | 18         |
| UTI,s                                        | 78        | 15.6       |
| High BP                                      | 80        | 16         |
| Backache                                     | 230       | 46         |
| Eclampsia                                    | 92        | 18.4       |
| No                                           | 215       | 43         |
| Does this complication was due to your job (n=285) | 165       | 57.8       |
| No                                           | 120       | 42.1       |
| Mental health negatively affected by job (n=500) | 325       | 65         |
| Yes a great deal                             | 90        | 18         |
| Yes quite a bit                              | 50        | 10         |
| Very little                                  | 3         | 7          |

Table-III. Pregnancy

| Factors                                      | Complications during pregnancy |
|----------------------------------------------|--------------------------------|
|                                              | Yes=285                        | No=215                         |
|                                              | %                              | %                              |
| N=500                                        | N                              | N                              |
| Distance from workplace                      |                               |                                |
| <5                                           | 31                             | 69                             |
| 6-10                                         | 63                             | 118                            |
| >10                                          | 191                            | 28                             |
| Job Stress Level                             |                               |                                |
| High                                         | 221                            | 157                            |
| Medium                                       | 54                             | 51                             |
| Low                                          | 10                             | 11                             |
| Stress faced at workplace during pregnancy   |                               |                                |
| High                                         | 243                            | 182                            |
| Medium                                       | 42                             | 33                             |
| Low                                          | 0                              | 0                              |
| Standing hours during job                    |                               |                                |
| <3                                           | 40                             | 79                             |
| 4-5                                          | 56                             | 80                             |
| >5                                           | 189                            | 56                             |
| Support from Employers and colleagues        |                               |                                |
| Supportive                                   | 56                             | 79                             |
| Neutral                                      | 85                             | 80                             |
| Non-Supportive                               | 144                            | 56                             |
| Satisfaction from t/m at job in pregnancy    |                               |                                |
| Satisfied                                    | 58                             | 77                             |
| Neutral                                      | 89                             | 71                             |
| Un-satisfied                                 | 138                            | 67                             |

Table-IV. Association of workplace factors with complications during pregnancy
Table-VI shows the results of the logistic regression which suggests the strong association between distance from workplace, job stress level, stress faced during pregnancy and standing hours at job with the complications of pregnancy faced by the participants during their pregnancy while working. However, support from their supervisor and colleagues and how much satisfied a pregnant worker from the treatment she got from her workplace during pregnancy were not found to be significant during this logistic model.

| Variables                        | P-value | OR   | 95% CI       |
|----------------------------------|---------|------|--------------|
| Distance from workplace          | < 0.01  | 11.7 | 5.98 - 22.93 |
| Job stress level                 | <0.01   | 1.82 | 1.13 - 2.96  |
| Stress level during pregnancy    | <0.01   | 2.15 | 1.18 - 3.91  |
| Standing hours at job            | <0.01   | 4.76 | 2.17 - 10.37 |
| Support at workplace             | 0.995   | 4.73 | 2.07 - 7.89  |
| Satisfaction from job           | 0.554   | 5.57 | 1.49 - 3.76  |

Table-VI. Logistic regression of the employment factors associated with complications during pregnancy

DISCUSSION
This section discusses the results and findings from study and focuses especially on specific research questions, which were finding the determinants at workplace that have influences on pregnancy.

The participants in causation of complication saw availability of different facilities by the organization including transportation as an important factor during pregnancy and childbirth. This finding was consistent with the findings from previous studies like workingwomen from industrial and agriculture sections have reported spontaneous abortions in many studies.11

Similarly, other studies also documented use of public transport particularly for more than one hour on one way a risk for premature births in workingwomen.12

According to Pakistan Maternity benefit ordinance1958, paid maternity leaves should be provided to all the workingwomen 6 weeks before and 6 weeks after the delivery. It is also admissible by law to combine these leaves with other leaves if required.13

This all was done to balance the family and work life of workingwomen. In our research, only handful women got this right of maternity leaves and all others especially working in small organization were not able to claim for this right. To take care of a child is responsibility of both parents and it can only be fulfilled with full health and no other action can substitute for this duty. Lack of support in this regards can discourage the females to participate in labour force on one hand and can diminish the family resources on the other side.14

As most of the participants of our study were
young and had a quite high level of education, the knowledge regarding the health and healthy practices could not be undermined. Their age at marriage and first pregnancy was found to be optimum.

In spite of all this, many workingwomen faced a lot of ill health during their pregnancy and complications during childbirth along with ill health during postnatal period.

Almost all pregnancies were pre-planned and well anticipated and also got their antenatal check ups during their pregnancy. In our survey, more than half of the participants got one or another complication during the pregnancy and all of them ascribed these to their job. About one third of participants reported the occurrence of high blood pressure and preeclampsia during pregnancy. This finding was also reported in many previous studies where preeclampsia was found to be a cause of adverse outcome of pregnancy like premature and small for date’s babies. A Meta analysis about this also associated physically demanding work with pregnancy induced hypertension and preeclampsia.

Distance from workplace, job stress during pregnancy and standing working hours found to be strongly associated with the complications of pregnancy but the factors like support from supervisor and colleagues and satisfaction of the participants by the treatment she got during pregnancy at workplace had been found associated with the complications of pregnancy. Similar finding regarding long-standing hours were found in a prospective cohort study where preterm births were found to be associated with long standing.

**Conclusion and recommendations**

The study unveiled many factors, which are having profound effects on health of women during pregnancy. It gives an evidence that there is not sufficient health care policies and legislations which can give protection to working women from adverse effects, they are suffering due to the specific work related factors. There is great need to improve the outlook of workplaces for the working mothers so that they cannot only enjoy a healthful family life but also can contribute to the economy of the country.

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We cannot become what we need to be by remaining what we are.

– Max De Pree –

### AUTHORSHIP AND CONTRIBUTION DECLARATION

| Sr. # | Author-s Full Name       | Contribution to the paper                                                                 | Author-s Signature |
|-------|--------------------------|-------------------------------------------------------------------------------------------|--------------------|
| 1     | Tazeem Akhtar            | Conceptualization, Data collection, Literature search and manuscript writing and reviewing. |                    |
| 2     | Muhammad Athar khan      | Concept building, data analysis and reviewing details.                                     |                    |
| 3     | Saira Afzal              | Data collection, analysis and results, Reviewing the article.                              |                    |