**Behnam R. Al-Saigh, Ahmed M. B. Alkafajei,
T. N. Sugathan and Sadiq J. Abbas**

# The Problem of Pregnancy Wastage from an Epidemiological Perspective—An Exploratory Study in Basrah

ONE of the most striking changes that has happened in the field of health care in the last three decades is that the focus of attention has shifted from the individual to the family and thence to the community. This change in approach has largely stemmed out of the realisation that the individual can no longer be solely held responsible for the state of his or her health as this is largely determined by a variety of factors over which he or she has hardly any control.

Family health is deemed to be the bedrock on which'society has to build the edifice of its health system. Family health is essentially to be built round the life-experiences of mothers and children. There are major gaps in our knowledge regarding the array of factors that determine their health status. Very often, even the existence of the problem is not appreciated. In this connection, the problem of pregnancy wastage which has a direct bearing on fertility and maternal health has received only scant attention. Problems associated with pregnancy wastage assume greater importance as answers to many of them lie within the scope of any organised family care programmes.

No reliable data on the magnitude of pregnancy wastage is available for

Iraqi women. Hardly any attempt has been made so far, to our knowledge, to study this problem in the community. With the existing high fertility and infant mortality rate in the country [1] it can be reasonably hypothesized that a high incidence of pregnancy wastage occurs among mothers in Iraq calling for concerted public health action.

The present study was undertaken in Basrah during 1978 with the following objectives: (i) estimate the extent of pregnancy wastage in the urban community, and (ii) study some of the bio-social factors that influence it.

## The Data

As a preliminary step, it was considered desirable to estimate the magnitude of pregnancy wastage among wives of male employees working in the Basrah Governorate. A sample of male employees aged between 15 to 55 years working in different governmental institutions in the area was included in the study. A self-administered structured questionnaire was used to gather data pertaining to the socio-economic status, marriage, fertility, pregnancy wastage, contraceptive practice and infertility. The various section-heads of these institutions were given instructions for the filling up of the questionnaires who in turn explained the same to their workers. The workers who were unable to fill the questionnaires independently were assisted by the heads of the sections to complete them. The questionnaires were administered to 8200 workers. The overall response rate was 65.0 percent.

(i) *Characteristics of the Respondents,* The characteristics studied were—age, parity, duration of marriage, place of origin and occupation. The findings are given in Appendix table 1.

Majority of respondents (60.4 percent) were residents of Basrah city and the rest from the surrounding sub-districts. More than three-fourth of the mothers belonged to the age group 20 to 39 years and were distributed almost uniformly within this interval. The median age was found to be 31.4 years.

The average number of live-births of the respondents was 4.3. It was significant that nearly one-fifth (20.2) of them had 7 or more live-births indicating a high fertility experience during their marital life. The average age at marriage was estimated to be 25 years for the male and 19 years for the female which is slightly lower than the national estimate (1973-75 : male 26.8 and female 20.6)

[21. The median marital duration was 11.3 years and 56 percent of the cases had a marital duration of 10 years and more.

The respondents were mainly civil servants (63.6 percent) including professionals, office employees and other workers. The self-employed as well as the skilled workers accounted for 4.6 percent and 13.8 percent, respectively. The proportion of the unskilled workers included in the study was 17.4 percent It is evident, therefore, that the respondents belonged to a relatively better socio-economic level as compared to the general cross section of the population [3].

The proportion of husbands reported to have more than one wife (bigamy) was only 8.8 percent. High prevalence of contraceptive practice was observed among persons on the study sample. More than two-fifth of the respondents had reported that they had used or were currently using one of the methods of contraception.

(ii) *Pregnancy Wastage.* The information on the experiences of women with at least one pregnancy wastage due to either spontaneous abortion or still birth was gathered from those who had proved their fertility with at least one pregnancy termination.

An attempt was made to estimate the extent of pregnancy wastage in terms of incidence as well as prevalence rates referred to hereafter as PWI and PWP. The number of pregnancy loss (abortions and/or still births) per 1000 last terminations is referred to as PWI and the number of women who had at least one pregnancy loss in the past including the last termination per 1000 women is referred to as PWP. Appendix table 2 presents the estimated pregnancy wastage (incidence and prevalence) by duration of marriage. It is observed that nearly one fifth of the women had reported one or more pregnancy wastage (PWP) and 43 out of 10CO last terminations resulted in pregnancy loss (PWI). Among women with a marital duration of less than 5 years, it was observed that one out of every seven had at least one pregnancy loss. By the time the women complete 20 years of marital life, almost one fourth of them lost at least one of their pregnancies either due to abortion or still birth. The corresponding incidence rate (PWI) reveals the highest probability of pregnancy wastage (64.9 per thousand) within the first five years of marital life; it remained around 40 per 1000 in later period, except among women with marital life duration, 20 years and above. The last group revealed a PWI in the declining order 32.2 and 26.7 for the marital duration 20 to 24 and 25+ respectively,

which could be attributed mainly to recall error-

Compared to similar studies carried out in other countries, the extent of pregnancy wastage observed in the present study is much lower [4, 5]. Many such studies suggest that spontaneous abortions occur in about 10 percent of all pregnancies [6]. This excludes those terminations of pregnancies which occur at a very early stage of gestation, for women often do not even know that they are pregnant [7], The level of pregnancy wastage in western countries is estimated to be between 100 to 200 per 1000 pregnancy terminations. In Punjab [8] it was estimated to be 136 out of 1000 pregnancy terminations, whereas among Taiwanis [9] women it was found to be 165- The recent 'Collaborative Studies on Family Formation and Pregnancy Outcome[1] carried out in India, Iran, Lebanon, Phillipines and Turkey under the auspices of World Health Organisation revealed a pregnancy wastage ranging from 35.9 in Gandhigram (India) to 179.7 in Beirut (Lebanon) [10]. The Turkey and Iran studies also revealed a high pregnancy wastage of the order of 151 and 124 per 1000 terminations respectively (sec Appendix table 3).

It may be recalled that the rate of induced abortions in many countries varies widely. For example, the Taiwan study revealed that almost one third of the total reported abortions were induced ones. The fact that the induced abortions are not separated out while estimating the P\VI might be a possible reason for such a wide variation seen in the pregnancy wastage rate reported from these countries.

The problem of pregnancy wastage in the present study was further examined restricting the observations to the couples married within the last five years. As observed earlier, 13.9 percent women in this group reported wastage of one or more pregnancies. Relating this with that of the tolal number of live births (1.29 per women) an incidence of pregnancy wastage of the order 108 per 1000 pregnancy terminations (as minimum) was arrived at. This estimate is likely to be more reliable as it minimises recall errors that are usually present in this type of study [11]. This rate compared favourably with the incidence of pregnancy wastage observed in the Teheran Studies (124.3).

Early fetal loss (abortions) accounted for about two-thirds of the total pregnancy wastage. It was observed that the incidence of abortion during the initial first five years of marital life was the highest and declined consistently with the increase in the duration of marital life. It was revealed that less than

one tenth of the women with a marital life duration of less than 5 years had experienced atleast one abortion. The prevalence rate of abortions increased to 148.5 per 1000 women in the subsequent interval from 5 to 9 years followed in sequence by an irregular pattern (Appendix table 4).

The incidence of still birth reported in the present study is higher as compared to the findings reported by the various WHO collaborative studies in Asian countries referred to above. Occurrence of still-birth was responsible for one-third of the total pregnancy wastage and had its highest incidence in early as well as late marital periods. If we restrict our observations to the last pregnancy terminations of those married during the last 5 years, the incidence of still births would work out to 20,5 per 1000 pregnancies. The rate would be 14.6 for couples who got married 5 to 9 years prior to the surveys. An increase in the incidence of still birth was observed with increase in marital duration which reached a maximum of 24.8 per 1000 among women with marital duration ranging from 15 to 19 years. Such a 'U' shaped trend could well be attributed to the higher risk associated with extremes of age and parity. It may be observed that the proportion of women who have had still births has increased consistently with the marital duration from 52.3 to 105.3, among women with marital duration less than 5 years and 20-24 years respectively (Appendix table 5).

(iii) *Factors Associated with Pregnancy Wastage.* The implications of bio-social correlates of pregnancy wastage are not clearly understood. Biomedical studies have indicated the importance of age and parity. The association of socio-economic status with the incidence of pregnancy wastage has also been shown in several studies. An attempt is made here to look into some of the bio-social correlates of pregnancy wastage. The factors studied include age of the mother, parity, difference in spouse-age, mortality experience among the live born, contraceptive practice and the practice of bigamy.

*(a)* BIOLOGICAL VARIABLES. Both PWI and PWP suggest that there is a high probability of pregnancy loss occurring at the extremes of both age and parity (see Appendix tables 6,7). The PWI, at *64.4* per 1000 among parity 1, declines continuously in the succeeding parities to reach a minimum level of 13 3 among women of parity 7-8, followed by a steep increase to 60.9 among women of parity 9 and above. The prevalence of pregnancy wastage (PWP) by parity also consistently reveals a similar variation. Nearly one sixth of the women on

parity one had reported one or more pregnancy loss. The increase of PWP in the succeeding parity groups was only marginal upto parity 8, after which it rapidly increased to a level of 237.5 among women of parity 9 and above. Thus it was evident that there was higher pregnancy wastage among women of parity one and 9 + as compared to the intermediate parity groups. The incidence of pregnancy wastage was also found to be quite high among mothers below 20 years of age, the lowest for those between 20 to 24 years and increasing with age thereafter. More than one tenth of the women below 20 had experienced one or more pregnancy wastage. The PWP was found to be not significantly altered among those aged 20 to 24 years. PWP, however, reached a level of 205.6 among those in the 30 to 34 age-group and remained nearly stable thereafter except for an abrupt increase among mothers of age 45 years and above, indicating the probability of a higher incidence of pregnancy wastage in elderly women compared to mothers in the earlier age groups.

*(b)* SOCIO-ECONOMIC FACTORS. About the association of pregnancy wastage with socio-economic factors, as the parity or age differences were likely to give rise to different estimation of pregnancy wastage, the parity adjusted estimates (both PWI and PWP) were worked out to reveal this association. Parity is here preferred to age as it has shown more variability in pregnancy wastage as compared to age. Appendix table 8 gives the parity adjusted rates for occupational differences, contraceptive practice, practice of bigamy and mortality experience among live born.

(i) *Occupation of Husband.* The unadjusted estimate of pregnancy wastage showed a higher incidence among wives whose husbands were either self-employed or skilled workers and a lower estimate for civil servants and the unskilled. There was no definite pattern with respect to the level of socio-economic status. This was further examined by classifying the respondents into two categories : Higher *(A)*, and lower *(B)*, by grouping the occupations according to skill and the economic level. The parity adjusted rates revealed no significant difference between these two groups in case of both PWI and PWP. Although the estimate of these rates was slightly higher among mothers in group A in case of PWI, the difference was not statistically significant. This observation is contrary to findings from the studies in other countries [12].

00 *Contraceptive Practice.* The couples who practised contraception generally belonged to a better socio-economic level as compared to the ones who did not do so. The parity adjusted estimate of pregnancy wastage showed a higher value

among the non-users of contraceptives as compared to the users. However, the difference observed between these two groups was very narrow and not statistically significant. This also is an evidence to consistently suggest the lack of any significant variation in pregnancy wastage among different socio-economic groups.

*(iii) Practice of Bigamy.* The above finding was strengthened by the analysis with respect to bigamy. It is known that the practice of bigamy is more among the poor and the uneducated as compared to the well-to-do groups. In the sample studied, 12 percent of the husbands who were either unskilled or skilled labourers had more than one wife compared to 7.4 percent in case of civil servants. The present study revealed a slightly higher pregnancy wastage among mothers whose husbands had more than one wife, as compared to mothers whose husbands had only one wife. However, as seen in the earlier analysis the difference in the pregnancy wastage rates between these two groups was not statistically significant.

(iv) *Mortality among the Live Born.* The level of mortality among live born children is considered as an index of the extent of utilisation of medical care as well as the socio-economic and other environmental conditions of the family. It indirectly reflects the poor level of health of mothers. The mothers in the present study were grouped into two categories namely—those who had and those who had not lost any of their live born children. The parity adjusted PWI in the former group was found to be 62.5 as compared to 34.3 observed in the latter group. The corresponding increase in the prevalence of pregnancy wastage (PWP) was almost 70 percent among mothers who had mortality experience among their live-born as compared to mothers who had no such experience. The difference observed in PWP between these two groups was found to be statistically very highly significant.

**Discussion**

The present study indicates that the problem of pregnancy wastage is sizeable with the still birth rate considerably high. It consistently reveals a higher risk of pregnancy wastage at extremes of age and parity. Those in their middle or late twenties have shown the lowest rate. The highest incidence of pregnancy wastage was noted in case of the first pregnancy. Confirming our observation on total live births and history of pregnancy loss among women of marital

duration less than 5 years, the incidence of pregnancy wastage is estimated to be 108 per 1000 live births. This clearly indicates a sizeable problem of pregnancy wastage among the Iraqi women.

The study did not bring out any definite association of pregnancy wastage with the socio-economic status of the family. In studies conducted in other countries, where such an association has been found, the usual interpretation offered is that socio-economic factors may be responsible for the state of health of the mother, possibly due to the differences in the quality of maternal care received during prenatal phase. This in turn, it is argued, influences foetal death rates. Studies on child mortality in Latin American countries provided evidence for positive association between better utilisation of medical care during pregnancy and the post-parturn periods and lowering of childhood mortality [13]. The present investigation has revealed strong association between the mothers' experience regarding pregnancy wastage and mortality experience'; among her live born. This further supports the hypothesis linking pregnancy wastage with maternal care availed during the pregnancy. For example, a seventy percent increase was observed among mothers who had experienced loss of their live born as compared to mothers all of whose children had survived. Extending the same argument it may be inferred that lack of adequate prenatal facilities may be an important factor contributing to higher incidence of pregnancy wastage.

The study indicates the need for prenatal care especially for pregnant mothers at the extreme of age and parity on a priority basis.

Some of the recent studies on pregnancy wastage have shown even a positive relationship with socio-economic level. These studies have identified a higher incidence of induced abortion in addition to the spontaneous one. The abortion rate *per se* is found to be low as compared to other countries. The plausible reason is that these studies include induced abortions, whereas in the present study the induced abortion rate is assumed to be low in consonance with the deep-rooted cultural traditions and value systems. It is also likely that information on such events is not generally divulged in such a setting,

## Limitations of the Study

The study gave a non-response rate of almost 35 percent. However in a survey of this type, dependent on a self administered questionnaire, this may be

anticipated. From the enquiry it was revealed that quite a large proportion of such non-respondents were either unmarried or whose wives were of 50 years and above.

The respondents being the husbands, a recall lapse is likely to occur about events directly experienced by their wives. This might have especially underestimated the abortion rate and thereby the pregnancy wastage.

## References


1. Central Statistical Organisation, Ministry of Planning, Republic of Iraq, Annual Abstract of Statistics 1977, Table 2/3, p. 37 (An Infant Mortality Rate of 104.5 for the Rural and 76.3 for the urban area, reported from the vital events survey 1973-75. The corresponding Gross Reproduction Rate observed was 3.9 for rural and 3.1 for urban area respectively).
2. United Nations Economic Commission for Western Asia 1978, *Demographic and Related Socio-economic Data Sheets for- Countries of the Economic Commission for Western Asia,*
3. Central Statistical Organisation, Republic of Iraq, 1978, *Result of Census Iraq 1977,* Table 71, p. 126 (for occupation).
4. Ram, E. R. and Datta, B. K... 1977, *Pregnancy Wastage and Assistance during Delivery of the Rural Mothers : Document on Human Reproduction, Family Planning and Population Dynamics,* WHO Regional Office for South East Asia, New Delhi, India.
5. Shapiro, S. E., Jones, W. and Densen, P. M., 1962, A life table of pregnancy termination and correlates of foetal losses. *Milbank Memorial Fund Quarterly,* 40, 7-45,
6. United Nations, New York, 1954, *Fetal, Infant and Early Childhood Mortality,* 1, the Statistics.
7. James, **W. H., 1970, The** incidence of spontaneous abortion, *Population* ***Studies,*** **24(1),** 241.
8. Potter, R. G., Wyon, J. B., New, M. and Gordon, J. E., 1965, Fetal wastage in eleven Punjab villages, *Human Biology,* 37, 262-273.
9. Anrudh, K. Jain 1969, Fetal wastage in a sample of Taiwanese women, *Milbank Memorial Fund Quarterly,* **SLVII** (3), Part 1.
10. World Health Organisation, Geneva, 1976, *Family Foundation Pattern and Health.* Edited by Omran A. R. and Standley C. C.
11. Som, R. K., 1959, *On Recall Lapses in Demographic Studies.* International Population Conference Vienna, 1959, p. 50-61.
12. Freedman, R., Coombs, L. C. and Friedman. 1966, Social correlates of Fetal mortality, *Milbank Memorial Fund Quarterly,* ***44,*** 327-344.
13. Ruth, Rice, Puffer and Carlos, V. Serrano, 1973, *Pattern of Mortality in Childhood,* Report of the Inter-American Intvestigation of Mortality in Childhood, Scientific Publication No. 262, Pan American Health Organisation, WHO, p, 299.

## APPENDIX

TABLE 1—PARTICULARS OF THE RESPONDENTS

| | *Percent* |
|---|---|
| *1. Place of Residence* | |
| Basrah City | 60.4 |
| Qurna | 15.8 |
| Other neighbouring area | 23.8 |
| *2. Age of wife* | |
| below 20 | 4.7 |
| 20-24 | 17.2 |
| 25-29 | 22.7 |
| 30-34 | 19.5 |
| 35 39 | 17.7 |
| 40-44 | 9.7 |
| 45+ | 8.5 |
| All | 100.0 |
| *3. No. of live births* | |
| upto 2 | 28.2 |
| 3-4 | 28.4 |
| 5-6 | 23.2 |
| 7-8 | 12.3 |
| 9+ | 7.9 |
| All | 100.0 |
| *4. Duration of marriage (in yrs.)* | |
| 0-4 | 19.5 |
| 5-9 | 24.6 |
| 10-14 | 22.5 |
| 15-19 | 14.6 |
| 20+ | 18.8 |
| All | 100.0 |
| *5. Occupation of husbands* | |
| Self employed | 4.6 |
| Civil servant | 63.6 |
| Skilled/Semi-skilled | 13.8 |
| Unskilled | 17.4 |
| Others | 0.6 |
| All | 100.0 |

TABLE 2—INCIDENCE AND PREVALENCE OF PREGNANCY WASTAGE PER 1000 BY DURATION OF MARRIAGE

| *Duration of Marriage (in yrs.)* | *Incidence PWI* | *Prevalence PWP* |
|---|---|---|
| **0-4** | **64.9** | **139.1** |
| **5-9** | **40.1** | **197.1** |
| **10-14** | **39.9** | **174.5** |
| **15-19** | **45.1** | **193.7** |
| **20-24** | **32.2** | **244.0** |
| **25+** | **26.7** | **231.7** |
| **All** | **43.0** | **187.4** |
| **Abortion alone** | **25.7** | **120.4** |
| **Still birth alone** | **17.3** | **61.0** |
| **AB + SB** | **—** | **6.0** |

TABLE 3—INCIDENCE OF PREGNANCY WASTAGE IN BASRAH STUDY COMPARED TO OTHER STUDIES

| *Study* | *Incidence per 1000 pregnancy termination* | | |
|---|---|---|---|
| | *AB* | *SB* | *Total* |
| Present study | 25.7 | 17.3 | 43.0 |
| Gandhigram (India) | 20.4 | 15.5 | 35.9 |
| Teheran (Iran) | 109.8 | 14.5 | 124.3 |
| Beirut (Lebanon) | 167.9 | 11.8 | 179.7 |
| Manila (Phillipines) | 78.5 | 9.6 | 88.1 |
| Ankara (Turkey) | 137.0 | 14.0 | 151.0 |

TABLE 4—INCIDENCE AND PREVALENCE OF ABORTION PER 1000 BY DURATION OF MARRIAGE

| *Duration of Marriage (in yrs.)* | *Incidence per 1000 termination* | *Prevalence per 1000 women* |
|---|---|---|
| 0-4 | 44.4 | 89.3 |
| 5-9 | 25.5 | 148.5 |
| 10-14 | 23.2 | 119.9 |
| 15-19 | 20.3 | 130.8 |
| 20-24 | 19.3 | 150.7 |
| 25+ | 8.9 | 139.1 |
| All | 25.7 | 126.4 |

TABLE 5-INCIDENCE AND PREVALENCE OF STILL BIRTH PER 1000 BY DURATION OF MARRIAGE

| *Duration of marriage (in yrs.)* | *Incidence per 1000 last termination* | *Prevalence per 1000 women* |
|---|---|---|
| 0-4 | 20.5 | 52.3 |
| 5-9 | 14.6 | 56.6 |
| 10-14 | 16.7 | 59.9 |
| 15-19 | 24.8 | 67.9 |
| 20-24 | 12.9 | 105.3 |
| 25+ | 17.8 | 98.5 |
| AH | 17.3 | 67.0 |

TABLE 6-INCIDENCE AND PREVALENCE OF PREGNANCY WASTAGE PER 1000 BY PARITY

| *Parity* | *Incidence* PW(I) | *Prevalence* PW(P) |
|---|---|---|
| \ | 64.4 | 166.1 |
| 2 | 50.1 | 177.2 |
| 3-4 | 37.8 | 190.6 |
| 5-6 | 36.4 | 175.6 |
| 7-8 | 13.3 | 211.6 |
| 9 + | 60.9 | 237.5 |
| All | 43.0 | 187.4 |

TABLE 7-INCIDENCE AND PREVALENCE OF PREGNANCY WASTAGE PER 1000 BY AGE OF WIFE

| *Age of wife (in yrs.)* | *Incidence PW(I)* | *Prevalence PW(P)* |
|---|---|---|
| **Below 20** | **93.8*** | **116.6*** |
| **20-24** | **6.9** | **106.0** |
| **25-29** | **20.2** | **137.8** |
| **30-34** | **16.9** | **205.6** |
| **35-39** | **36.8** | **190.8** |
| **40-44** | **0.0** | **208.8** |
| **45+** | **12.8** | **235.3** |
| All | 43.0 | 187.4 |

*Based on smaller observation (82) only.

TABLE 8-PARITY ADJUSTED INCIDENCE AND PREVALENCE OF PREGNANCY WASTAGE RATE PER 1000 S.E. BY SOCIAL AND MEDICAL FACTORS

| *Factors* | *Incidence* ***PWI ± SE*** | *Prevalence* ***PWP ± SE*** |
|---|---|---|
| **1. Social Factors** | | |
| ***(a) Occupation (Husband)*** | | |
| **Group A (Higher)** | **37.2 ± 3.9** | **181 ± 13.3** |
| **Group B (Lower)** | **34.9 ± 6.9** | **190 ± 12.4** |
| ***(b) Contraceptive Use*** | | |
| **Used** | **36.8 ± 4.8** | **186 ± 9.5** |
| **Never used** | **37.5 ± 4.8** | **191 ± 8.4** |
| ***(c) Practice of Bigamy*** | | |
| **Not Present** | **32.5 ± 3.3** | **188 ± 6.5** |
| **Present** | **47.2 ±17.3** | **193 ±26.9** |
| **2. Medical**—Mortality **among Live Borns** | | |
| No mortality experience | 34.3 ± 3.5 | 176 ± 6.6 |
| Mortality experience | 62.5 ± 17.0* | 300 ± 28.5*** |

•Significant (P 0.05)
***Very highly significant diiference (P 0.001).