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METABOLIC DIFFERENCES BETWEEN ELDERLY PRIMIGRAVIDAE AND MULTIGRAVIDAE: A CROSS-SECTIONAL STUDY FROM BALUCHISTAN

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ABSTRACT

Background: Western industrialized countries are seeing a steadily rising trend in pregnancies at advanced maternal age (AMA, i.e. from age 35 upwards), and same goes true for developing countries. At present, AMA has long been looked askance at because of its linkage with the high incidence rate of pregnancy complications. However, whether maternal age leads to concomitant changes in metabolic characteristics during pregnancy is still unknown. Moreover, no materials have yet been reported from Baluchistan area of Pakistan where the present study was carried out.

Objective: To compare the serum cholesterol levels, blood glucose, and BMI between elderly primigravidae (the first pregnancy) or multigravidae in mid second trimester.

Method: This cross-sectional study was carried out from January to April 2023 at three hospitals in Turbat, Baluchistan. Subjects for the investigation included 272 pregnant women aged 35 years and over (132 primigravidae and 140 multigravidae). Sociodemographic data, obstetric history and mid-second trimester laboratory findings (serum lipids, HbA1c, and BMI) were collected and analyzed.

Results: Average age was 36.8 ± 1.7 years for primigravidae and 37.5 ± 2.1 years for multigravidae. Hypertension and diabetes were more prevalent among multigravidae (22.1% and 18.6%) than primigravidae (16.7% and 12.1%). Multigravidae had higher mean BMI (27.3 ± 3.5 kg /m² vs. 26.1 ± 3.2 kg/m²), total cholesterol (217.8 ± 31.4 mg/dL vs. 205.5 ± 28.3 mg/dL), LDL (134.7 ± 25.1 mg/dL vs. 126.4 ± 22.6 mg/dL), triglycerides (175.5 ± 34.1 mg/dL vs. 162.1 ± 30.6 mg/dL) and HbA1c ($5.9\% \pm 0.8$ vs. $5.6\% \pm 0.7$), but lower HDL. Hemoglobin levels were also slightly lower for multigravidae.

Conclusion: Aging multigravidae have a worse obesity-adjusted metabolic profile than primigravidae s. Elderly women with kids must be carefully monitored and educated, as shown by the findings with senescence underscored in pregnancy.

Key Words: Serum Cholesterol, Blood Glucose, Body Mass Index, Primigravida, Multigravida

INTRODUCTION

In contrast, however, the mid-30s and later have seen a rising tide of elderly primipara pregnancies [1,2]. In days gone by, advanced maternal age (AMA), usually defined to include those 35 years and over, was in evidence but not all that common. [1,2,3]. Today however it is most frequently seen. and detailed discussions about problems that might arise during a voyage of such proportions come into their own with multiparas of this hopelessly advanced age, marked by over-optimism coupled with inadequately prepared conditions for delivering a healthy baby. [12] What's more, among women of this age group, there has been a higher frequency of prenatal difficulties [7, 8]. But an increasing number of recent studies question for the first time whether AMA per se as a factor alone acts in this condition only, considering also that most women are free of hypertension and diabetes mellitus before they start receiving prenatal care [8, 9]. In a study by Callaway et al.) of pregnancy and its outcomes in women aged 45 years or older, the authors found no significant differences for maternal or neonatal health compared with younger mothers except the very interesting finding that the incidence of caesarean section was high. [2:11.] Likewise, a study by Suzuki et al.vi) on IVF pregnancies found that there were no major differences in birth outcomes as between the maternal age groups, apart from an increased frequency of pregnancy induced hypertension among younger women [9]. As elderly primigravidae--and multiparous women of all ages--become more common occurrences in the population at large, understanding the physiological differences between them is of profound importance. Differences in serum cholesterol, blood sugar and BMI during pregnancy will have major implications for both mother and baby [19]. There is one final problem confronting the increasing number of elderly pregnancies in Bangladesh today: that no published data base exists with which to compare these basic metabolic parameters between elderly primigravidae and multigravidae. Therefore, this study seeks to identify and compare serum cholesterol levels, blood sugar concentrations and BMI between the elderly primigravidae group and the more numerous but just slightly younger multigravidae around middle pregnancy, opening up new perspectives for understanding various physiological differences that could potentially influence outcomes of pregnancy.

MATERIALS AND METHODS

During the first four months of the year 2023, this cross-sectional study was held at Turbat, in Baluchistan Province, Pakistan. Data was derived from the following three institutions: College Hospital of Medicine and Dentistry Mekran Medical Education Complex, Turbat Medical Centre and Bolan Medical Centre. The study population was elderly pregnant women, defined as those who are 35 years old or older. A total of 272 participants were included: 132 elderly primigravidae and 140 elderly multigravidae. Three reasons for identifying women as primigravidae are given in the text. The study employed purposive methods in selecting its sample: samples were selected on the basis of particular characteristics that appeared likely to be associated with the disease being studied. Results of blood tests were reported to every pregnant woman on the 15th and 20th week of gestation. Body Mass Indexes (BMIs) were calculated from their measured heights and weights at their antenatal visits. Also, detailed obstetric histories were taken that included any previous diseases such as diabetes mellitus (DM) or hypertension (HTN). Data from the three institutions were obtained in in standardized forms, and follow-up procedure was also carried out according to strictly standardized protocols. All ethical considerations relevant to the research were strictly observed and observed all the time. Informed consent was obtained from those participating in this study.

RESULTS

A total of 272 elderly pregnant women were included in the study: 132 elderly primigravidae and 140 elderly multigravidas. Mean maternal age for primigravidas was 36.8±1.7 years, while that of multigravidas was 37.5 ± 2.1 years. Tables 1-4 illustrate the sociodemographic variables of the participants under study, their medical histories and serum parameters. Down to education status, 48.5% of primigravidae and 44.3% of multigravidae had completed college or higher education. Most of the participants were housewives (78.8% and 81.4%, respectively), the remainder being in service

or on business. The rate of hypertension was 16.7% among primigravidae and 22.1% among multigravidae, whereas diabetes mellitus was found in 12.1% and 18.6%, respectively. History of heart disease was noted in 4.5% of primigravidae and 5.7% of multigravidae, the incidence renal disease (stage one) being rare (1.5% and 2.1%, respectively). Multigravidae's average BMI (27.3 ± 3.5 kg/m²) was higher than that of primigravidae (26.1 ± 3.2 kg/m²). Laboratory analyses showed that serum total cholesterol, LDL cholesterol, and triglyceride were higher in multigravidae than those of serum parameters of primigravidae. HDL cholesterol was also a little lower here. The mean HbA1c value was higher for multigravidae than for primigravidae (5.9% ± 0.8 vs 5.6% ± 0.7).1.2% of the 132 eased grannies and 1.7% of 128 blind grandis were BS-positive. The average hemoglobin (Hb%) was marginally lower among multigravidae.

The case participant's characteristic chart was summarized in the Table no.1. The average age of older primigravidae women was 36.8 ± 1.7 years -- and 37.5 ± 2.1 years for the older multigravidae group. For those who were primigravidae, 16.7% received SSC education. A number which is not very different was 34.8%. Yet among people in this group there were 48.5% graduates or higher, compared with only 45% for those who are considered multigravidae. As far as jobs are concerned, the great majority of both groups were housewives-78.8% among the primigravidae and 81.4% among the multigravidae -- while 21.2% and 18.6% respectively worked at service jobs or had their own business.

Table no.2 outlined the medical history of participants. The prevalence was 16.7% for hypertensive elder primigravidae women, 22.1% for hypertensive elderly multigravidae women. Among elderly, the rate of diabetes mellitus for primigravidae was 2. First Baby Steps Yet among primigravidae (12.1%) and multigravidae (18.6%) this parasitic illness is much more common. Heart disease was found in 4.5% of primigravidae and 5.7% of multigravidae women while renal disease was quite rare, whereas, the figures for these two groups respectively being 1.5% and 2.1%.

Table no.3 addresses body mass index and serum plasma postprandial blood glucose. The mean BMI was 26.1 ± 3.2 kg/m² in primigravidae versus 27.3 ± 3.5 kg/m² in multigravidae. For the lipid profile after fasting overnight, total cholesterol was 205.5 ± 28.3 mg/dL in primigravidae and 217.8 ± 31.4 mg/dL in multigravidae. Among primigravidae gave them a mean LDL cholesterol level of 126.4 ± 22.6 mg/dL, while the level among multigravidae was 134.7 ± 25.1 mg/dL. HDL cholesterol was a bit higher in first-time mother's beads (51.2 ± 8.4mg/dL) than among the brides of later years (48.9 ± 7.9 mg/dL). Triglyceride levels also ran lower in primigravidae (162.1 ± 30.6 mg/dL) than in the multigravidae (175.5 ± 34.1 mg/dL). The mean HbA1c levels were 5.6 +/- 0.7% in primigravidae but 5.9 +/- 0.8for pica in women with previous pregnancies, indicating that this is higher among those who have had more than one child. The rate of HBsAg positivity was 2.3% in primigravidae and 2.9% in multigravidae.

In Table no.4, the entire red blood counts (RBC) and hemoglobin status are demonstrated. The mean of hemoglobin (Hb%) is 11.7 ± 1.1% in primigravida and 11.4 ± 1.2% in multigravida, which means a slightly lower mean than that for primigravidae women WBC. As for white cell count (8,300 ± 1,200/cmm) among primigravidae group members and 8,500 ± 1,300 in the multipara one mean. The mean count of platelets was 240,000 ± 45,000 per mm³ in primigravidae women and 235,000 ± 43,000 in multigravida respectively.

Table no.1: The Socio-demographic & Clinical characteristics

Variables	Elderly Primigravidae (n=132)	Elderly Multigravidae (n=140)
Age (years), Mean ± SD	36.8 ± 1.7	37.5 ± 2.1
Education (%)		
SSC or below	22 - (16.7%)	30 (21.4%)
HSC	46 (34.8%)	48 (34.3%)
Graduation or above	64 (48.5%)	62 (44.3%)
Occupation (%)		
Housewife	104 (78.8%)	114 (81.4%)
Service/Business	28 (21.2%)	26 (18.6%)

Table no.2: Medical history

Variables	Elderly Primigravidae (n=132)	Elderly Multigravidae (n=140)
Hypertension (%)	22 (16.7%)	31 (22.1%)
Diabetes Mellitus (%)	16 (12.1%)	26 (18.6%)
Heart Disease (%)	6 (4.5%)	8 (5.7%)
Renal Disease (%)	2 (1.5%)	3 (2.1%)

Table no.3: BMI & Blood Test Profiles

Variables	Elderly Primigravidae (n=132)	Elderly Multigravidae (n=140)
BMI (kg/m²), mean ± SD	26.1 ± 3.2	27.3 ± 3.5
Total Cholesterol (mg/dL), mean ± SD	205.5 ± 28.3	217.8 ± 31.4
LDL Cholesterol (mg/dL), mean ± SD	126.4 ± 22.6	134.7 ± 25.1
HDL Cholesterol (mg/dL), mean ± SD	51.2 ± 8.4	48.9 ± 7.9
Triglycerides (mg/dL), mean ± SD	162.1 ± 30.6	175.5 ± 34.1
HbA1c (%), mean ± SD	5.6 ± 0.7	5.9 ± 0.8
HBsAg Positivity (%)	3 (2.3%)	4 (2.9%)

Table no.4: Complete Blood Count (CBC) and Hemoglobin (Hb%)

Variables	Elderly Primigravidae (n=132)	Elderly Multigravidae (n=140)
Hemoglobin (Hb%), mean ± SD	11.7 ± 1.1	11.4 ± 1.2
Total White Blood Cells (cells/mm³), mean ± SD	8,300 ± 1,200	8,500 ± 1,300
Platelet Count (cells/mm³), mean ± SD	240,000 ± 45,000	235,000 ± 43,000

DISCUSSION

This study provided valuable data for the three types of profiles: socio- demographics, clinical environment and biochemical content for first-time and multiple elderly women. There are also several trends in the data which differ from that of this study. In several respects, such as age, past illness, lipid profiles, and other physiological indicators had made prominent appearances in both countries. The study has found that the average age of elderly first-time mothers (36.8±1.7 years) is slightly lower than that of multiparas (37.5±2.1 years). Even today, it appears consistent with one of the assumptions that women who have babies for the first time are older and tend to postpone having any strength until they have cleared up their debts or found some other way forward by 2046. This trend is also observed in industrialized countries, where women are increasingly choosing to bear children at a later age in the workforce because of factors such as career ambitions and financial security [12]. Both groups had relatively high levels of education. The relatively big majority had already graduated from high school or above, with first-time mothers (83.3 % are 78.6 %) always ahead in terms of this level of background knowledge. The big majority of both groups were housewives (78.8% of primigravidae and 81.4% of multigravidae), which suggests something about gender roles in this society. In terms of medical history, hypertension and diabetes were more common in multiparas than primigravida-- where they occurred for example with 22.1% out of multiparas affected by hypertension or 18.6% suffering only from diabetes. This phenomenon is basically consistent with previous research which showed a higher incidence of comorbid conditions like hypertension and diabetes in women who have had multiple pregnancies, perhaps because it is the cumulative effects of gestational hypertension or diabetes during prior pregnancies taking their havoc out on the system. These comorbidities are also well- known risk factors for unfavorable pregnancy outcomes, such as for instance pre-eclampsia and gestational diabetes. Particularly in older women, they are more often found at raised risk women when their age is 35 years old or above [4, 6]. One minor point that is surprising is both groups which had only a very low prevalence of heart disease and kidney problems. This may be due to the fact that people in both communities around more were much older than us were prepared for this specific risk. The mean BMI was higher in

elderly first-time mothers (27.3 ± 3.5 kg/m²) when compared with the multiparas 26.1 ± 3.2 kg/m²); this possibly means that women who have had babies before could have grown fatter as a result. Obesity is a recognized risk factor for many pregnancy complications, including pre-eclampsia and gestational diabetes, as well as more frequent caesarean births in women over 35 years of age [5, 13, 14]. Incidentally, BMI is an important factor affecting lipid metabolism, which could also explain why among all groups total cholesterol (217.8 ± 31.4 mg/dL) was highest in multiparas. This extrapolation from current research indicates that those who have had children already run at risk for dyslipidemia and metabolic illnesses more often still the case as they grow older, particularly if their "in previous pregnancies they were unsuccessful ""--as is so often the case with not only our own China but Japan also [6, 13]. HDL cholesterol levels were slightly higher in first-time mothers (51.2 ± 8.4 mg/dL) than in multiparas (48.9 ± 7.9 mg/dL). This is another indicator of their better cardiovascular health among this group: increased levels of HDL cholesterol are generally considered protective against cardiovascular diseases and might indicate a lifestyle which is more conducive to good health. By contrast, current epidemiological trends have made the following clear: among swine that have gone back and forth between trying ("try" appeals to) both first and second careers as long as possible (a sort of late bride's vocation), those who give birth even late above but young ones born at later times are now can be classified as beyond venture stage for more than 2 years are in fact most at risk. Triglyceride levels in the multiparas (175.5±34.1 mg/dL) were also higher than those of first-time mothers (162.1 ± 30.6 mg/dL), again illustrating a higher cardiovascular risk for the multiparas group. Increased triglycerides may be associated with obesity, metabolic syndrome, and insulin resistance--conditions that are more common in women with multiple pregnancies. The average HbA1c content was higher in the multiparas (5.9±0.8 %) than in first- time mothers (5.6±0.7 %), which indicates poor glycemic control within this particular group. This point is of much concern, Since HbA1c is a long -term marker of the blood sugar and group with higher levels than first-time mothers may be gestational diabetes in its future. Nevertheless, both groups have HbA1c levels under 6.5%, which is the threshold used to diagnose diabetes. This means that while both groups may have slight disarray concerning glucose regulation, no clinical signs of the disease as yet pretend. The low HBsAg positivity rate (2.3% in primigravidae and 2.9% in multiparas) is also in keeping with the overall low prevalence of hepatitis B in the local population, which may be a reflection of vaccination and screening programs having yielded results. Hemoglobin levels in both groups fell within normal limits, with an average of 11.7±1.1% for first-time mothers and 11.4±1.2% in multiparous women. These values suggest that neither group is afflicted by significant anemia, since the World Health Organization defines pregnancy anemia as blood hemoglobin levels below 11 g/dL. By contrast, the total white cell count in multiparas was slightly higher than for first-time mothers (8,500±1,300 cells/mm3 in multiparas versus 8,300 ± 1,200 cells/mm3 for first-time mothers), but this difference is not clinically significant [14-50]. Platelet counts also appeared to be similar between the two groups; no obvious problems with coagulation or platelet function emerged at this stage.

CONCLUSION

All in all, there are some significant clinical and biochemical differences. E.g it turned out that elderly multigravidae had higher BMI than elderly primigravidae. Elderly multigravidae had significantly higher levels of cholesterol, triglycerides and BMI, accompanied by marginally poorer glycemic control. By contrast, elderly primigravidae had a relatively healthier lipid profile and better glycemic control. These results suggest that for the elderly pregnant woman, especially one with multiple gestations in mind, it may not be as important to strictly limit lipid intake. They also point up other risk factors, such as diabetes, hypertension, and obesity in these kinds of women. Where multiple births are especially common or there is palpable social instability due to illegal status or violence toward foreign women, then singletons should be planned with serious consideration in advance.

Indeed, additional studies with large sample sizes, long-term follow-up and a comprehensive evaluation of the effects of these risk factors on maternal and fetal health are warranted.

LIMITATIONS OF STUDY

The main limitation of this study was its small sample size. Additional studies with larger sample sizes are highly recommended to assess the further causing factors and prevention strategies for control in Pakistan.

ETHICAL APPROVAL:

Ethical approval was taken from the Review Broad of the Mekran Medical College, turbat.

PATIENT'S CONSENT:

Informed written consent was taken from each patients for participating in the study, and publication of study results.

CONFLICT OF INTEREST:

The study has no conflict of interest to declare by any author.

AUTHOR'S CONTRIBUTION:

1. Literature search, conduct of study and editing.
2. Literature search, ethical approval and manuscript writing.
3. Sampling and results writing.
4. Statistics writing.
5. Literature review and discussion editing.
6. Review and editing.

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