Indian Journal of Science and Technology, *Vol 12(28), DOI: 10.17485/ijst/2019/v12i28/146019, July 2019*

ISSN (Print) : 0974-6846
ISSN (Online) : 0974-5645

The Influence of Selected Maternal Factors on Certain Birth Measures in (King Abdullah (KA) 1st – Teaching Hospital (TH))

Ali. A. A Rawabdeh[1], Rami M. Tubaishat[2], Anis S. Khassawneh[2] and Jamal Abu-Doleh[3]

[1]Health Planning and Management, Health Services Management Program, Department of Basic Medical Sciences, Faculty of medicine, Yarmouk University, P.O. Box: 566: Irbid - Jordan; ali.rawabdeh@yu.edu.jo

[2]Department of Public Administration, Faculty of Economics and Administrative Sciences, P.O. Box: 566: Yarmouk University, Irbid - Jordan; rami.tbaishat@yu.edu.jo, Khassawneh_a@yu.edu.jo

[3]Department of Business Administration, Faculty of Economics and Administrative Sciences, P.O. Box: 566: Yarmouk University, Irbid - Jordan; jdoleh@yu.edu.joo

Abstract

Background/Objectives: To examine the impact of maternal characteristics on the infant measures for monitoring and evaluating mother and child health programs. The primary aim of the study is to predict certain birth measures (weight, height, head and chest circumference), at the time of conveyance to assist in giving the restorative helps to the mother and child on time; and, anticipate childbirth complications that endanger baby's and mother's life. **Methods:** Data was collected from 970 convenience cases which were considered through enrolled two enlisted registered nurses as inter-observers for physical measurement for each newly born baby based on the worldwide acknowledged guidelines. **Results:** The multiple regression was utilized to investigate the relationship between birth weight and head and chest circumferences and several predictions (gestational age, parity number and age of the mother appeared relatively strong where R = 0.741. Whereby, R2 change value is 0.549 which suggests that all predictors together explain 54.9% of the variance in perceived results. Also, there is a factually noteworthy contribution as indicated by 0.002, 0.008, 0.011 individually. The ANOVA indicates that the model is critical (F-Value = 44.237). The predictors contributes to the outcomes, expressed by beta values which represent the unique contributions of each variable: the power of gestational period parity and age of the mother contribution overall results is 0.209, 0.38, 0.172 respectively which means a change (increase, decrease) in gestational period, parity and age of the mother in one extra unit will lead to change in head and chest circumference, and weight by 0.2, 008, and 0.011 units (cm, kg). **Conclusion:** The main findings of this article are: an increment in birth weights emphatically related with increment of gestational age increments; increasing the number of pregnancies one expects the increment in birth weight. It provides a substantial data for health policy and decision makers over a few maternal characteristics on the weight, head and chest circumference of the newborns in the northern portion of Jordan which clearly not accessible to bridge the gap between what need to be and the genuine far reaching selection of clinical hones to encourage secure conveyance cases in consonance with local & applied standard birth measures and universal (benchmarked) criteria, to diminish complications, checking and assessing mother and child wellbeing programs.

Keywords: Birthed Measures, Birth Weight, Gestational Age, Infant Mortality, Maternal Characteristics, Multiple Regressions, Newly Born Infant

**Author for correspondence*

1. Introduction

Maternal and Child Care (MCC) must be examined as an issue of essential significance since the commonsense plausibility of impacting the length of development, birth weight, length, head and chest circumference, by progression within the condition of advancement of the fetus and child. In talking about the connections between the length of development and the child birth weight, for occasion the truth must be born in intellect that both components of this connection are conditioned on many distinctive components which they appear a wide changeability.

This descriptive and analytical study attempts to get data regarding birth conveyed in Irbid governorate, to guarantee typical advancement of the child and its capacity for ordinary generation within the future.

Numerous researchers around the world examined fetus development in terms of relationship between the length of gestation and birth measures since of its awesome significance for pediatrics, obstetrics and legal hones.

The standard birth measures are frequently replaced by the quality measures to spot holes in the quality of care, and to improve the arrangement of health services with respects to universal benchmarks and so the significant quality take note. The administration of the health facility will utilize them to survey and screen the arrangement of assets, the execution of the forms, area of enhancements, thus driving quality change in obstetrics and gynecology word in King Abdullah the 1st Teaching Hospital (KA 1st – TH). The nonappearance of standardized key performance indicators for assembly ordinary birth measures at the time of conveyance can have an impact the quality of services been provided within the entire obstetric gynecological words and thus the security of moms and their newborns. With the unexpected increment extend of conveyance cases in the hospital, pleasant consideration needs to move to the standard of care, as destitute exhibitions were seen once the huge move of Syrians and Iraqis populace crossed guests to Irbid governorate in Jordan. In this manner, this requires abilities and capability to deal with the normal delivery and complications that request swift medical interferences.

This correlational study based on the examination of purposive sample of 970 births from the obstetric and gynecological department in KA 1st – TH in the year 2016 which assumed to be representative to Irbid in Irbid governorate, Irbid city, the centrally and intensely found with various socio-economic classes, as movement to it from towns and other littler towns is still taking put, is respect to be the foremost reasonable put for such examination, and it is very apparent why the King Abdullah the 1st teaching hospital in Jordan University of Sciences and Technology is chosen for this think about being the biggest and the foremost present day teaching hospital in Irbid Governorate. It exceptionally well prepared and with different facilities within the about each field of specialization.

The obstetrics and gynecology unit at (KA 1st – TH) received approximately 35-50 patients per day due to expansive back up plan patients alluding to that department from the Ministry Of Health (MOH), Royal Medical Services (RMS), in expansion to its primary patients of the college representatives and their dependents, who get free restorative treatment and are from the center and low-income classes.

2. Problem of the Study

Health and nourishment needs for moms are apparently met in Irbid governorate, were antenatal care is accessible within the 27 comprehensive health centers in expansion to the Mother and Child care clinics within the outpatient office at (KA 1st – TH) the nonattendance of universal benchmarks birth measures for newborns, coupled with clearly the overutilization of obstetrics and gynecology services by huge number of cross-border uprooted populace (Syrian, Iraqis) in expansion to the alluded cases from the government and private clinics, have depleted the clinical practices within the obstetrics and gynecology units in (KA 1st – TH).

This force more hazard in neonatal, and deferred care at the time of conveyance; childbirth complications that imperil the infant and the mother's life; injuries brought about from disappointment to supply pre-birth care, arrangement with troublesome labor, react suitably to critical bleedings, improper utilization of forceps, recognize side effects of fetal trouble and react to it, give legitimate care to untimely babies; and fundamental to diminish restorative medical errors (malpractice) ((i.e., negligence resulted in cerebral palsy, Erb's palsy, clavicle fracture, and, facial palsy) complications and avoid mortality rates i.e. Infant Mortality Rate (IMR)

and Maternal Mortality Rate (MMR). This thinks about comes to explore the standard birth measures and their conditional expectations to supply quick and legitimate medications for the delivered babies and moms at the time of conveyance.

3. Aims of the Study

The foremost aim of this study is to the effect of certain maternal factors (gestational age, parity number and age of the mother) on certain birth measures (weight, tallness, head and chest circumference) at the time of conveyance to assist in giving the restorative helps to the mother and child on time.

4. Material and Methods

The researchers utilized the micro-sampling technique from patient medical records as a secondary data collection in addition to direct observation method (primary data collection) by relegated two enlisted medical attendants as inter-observers for physical estimation for each recently born infant which was taken fundamentally based on the World Health Organization (WHO) measures. Contrasts[1] within the physical estimations surpasses the passable guidelines, i.e., weight 5 g, head circumference 5 mm, were redressed by enlistment of a third spectator to retake the estimation once more to guarantee greatest validity. The mother asked to state the primary day and the final menstrual period which on the off chance that not known with certainty would be excluded from the examination.

Information was taken of their regular menstrual cycle whether the final period was ordinary or not and whether any abnormal bleeding had happened since the given date of the final period. So, the gestational age of the child may well be recorded in total weeks. The socio-economic conditions of the mother as well as her age and a few other effecting components are too taken into thought within the investigation.

The pregnancy number (counting premature births) instead of the parity has been considered, the information prim imperia (i.e., to begin with birth with one or more previous abortions) are included within the moment and the afterward pregnancy number, because the avoidance would make no distinction within the mean birth weight[2]. The mean and the standard deviation were based on the assurance from the assumptions of Bill-Shape distribution (skewness and kurtosis) with four parameters construct the bends for birth weight head and chest circumference and stature as the most parameter.

5. Relationship between Birth Measures and Maternal Characteristics

Studies showed that a worldwide maternal and child health complication and their administration have impacts on the pregnant mother or her infant. The pregnant women proved to encounter these complications in the midst of pregnancy, due delivery time, and up to 42 days taking after childbirth. An assessed 15% of pregnant women in developing worlds encounter pregnancy-related complications and approximately 530,000 ladies around the world pass a way on annually with 95% of noticed complications[3-5].

Jordan is compared favorably with the developed world in terms of infant mortality rates. It diminished now a days from 29.9 per 1000 live births in1990s to 15.1 by 2016, which is strikingly lower than it neighboring countries Egypt, Iraq, Yemen, as well as within the Arab world, the world's average, the slightest created, Middle-East, South Asia, and Sub-Saharan African nations. In addition, within the range of Maternal Mortality Rate (MMR), Jordan has decreased this esteem per hundred thousand live births from 110/100,000 in 1990s to 58/100,000 in 2015, and this more later figure is lower than the comparing information in Yemen, and the Middle easterner world, as well as lower than the world average, the average within the least developed nations, as well as within the Middle-East, South Asia, and the Sub-Saharan African nations[6,7].

A numerous newborn child now a day's signify a deviation of intrauterine development which may be due to big sizes or little for their length of development[6-8].

For illustration, the newborn child born to the mother with diabetes is maybe the best-known case of the newborn child 'too big for length of gestation in spite of the fact that there moreover are newborn children with Beckwith's disorder, transposition of the incredible vessels, and post-term newborn children who proceed to develop since the placenta does not appear the ordinary maturing and fibrinous degeneration.

Customarily, the uterine environment favors as it were one pregnancy. The occurrence of two placentas

may result in two undersized babies or else one ordinary measured child and one particularly little, especially in indistinguishable twins. Twins are agent of those newborn children who are genuine dietary dysmature, where there have been an ordinary number of cell divisions but whose person cells are little (in obstetrics, indicating a newborn child whose birth weight is improperly low for its gestational age). This bunch incorporates newborn children born to moms with toxemia, hypertensive cardiovascular or renal infection, at tall elevation or with deficiently placentas. Usually these newborn children are little but ordinary[9-11].

They develop quickly after birth and do well unless there has been a serious unremitting issue of anoxia influencing the embryo. Be that as it may, another category, the overall development dysmature, incorporate newborn children born with an assortment of hereditary diseases (for illustration, cystic fibrosis, osteogenesis imperfecta), those born with chromosomal issues such as Down's disorder (mongolism), 17-18 trisomy and 13-15 trisomy; seriously distorted newborn children (for example, primary microcephaly, holoprosencephaly, Cornelia-De-Lange disorder, etc.) and a major gather of newborn children extremely influenced due to early intrusion of fetal tissues by rubella or cytomegalic consideration infections or with toxoplasmosis. These add up to developments dysmature need the typical numbers of cells due to less cell division. Their forecasts, not at all like the wholesome dysmature are poor and restricted[12-14]. The untimely newborn child within the scale of "fittingness for gestational age" is of ordinary estimate for length of development and represents a newborn child born before long, who was not permitted to remain in uterus and appreciate the preferences of intrauterine development. An extra category is signified by newborn children known as post develops, who have been in uterus past 42 weeks and who have started to resort their claim tissues, appear signs of weight misfortune but who are of nominal length and typical head circumference[13,15,16].

These are another shape of nourishing dysmature. Among the major reasons for the mindfulness of the different sorts of dysmature are that the dietary dysmature, with his fabulous guess ought to be expected as an item of high-risk pregnancy and inside the primary hours after birth start to be bolstered with intravenous glucose-containing implantations.

The child needs satisfactory glycogen saves in his/her liver and must be supplemented with glucose exceptionally early after birth in arrange to maintain a strategic distance from conceivable brain harm due to hypoglycemia[7-19].

6. Analysis

The researches begin testing the influence of specific maternal factor on the birth measure with proving the normality of the dependent variable. To demonstrate the typicality of the discoveries, the dissemination of the scores on the dependent factors of weight, tallness, head and chest circumference is sensibly typical (bell shape) with the margins of skewness of +0.8 and -0.8, and kurtotic of +3 1and -3.

Table 1 the mean birth weight 3.356 kg. Height 48.745 Cm, head circumference 33.824, chest circumference 32.899, gestational age 40.078 weeks, parity number three times (2.967) and age of mother 25.749 a long time with the comparing standard deviation S.D are 0.51, 2.57, 1.55, 1.87, 1.03, 1.51, and 7.09 individually. It seems to be that in most of the cases, head circumference is bigger than the chest circumference.

It is clearly genuine degree as the child gets more seasoned the chest circumference surpasses the head circumference[20,21]. As a matter of truth, the infant head circumference is measured by the level of her/his eyebrows 12.6 to 14.5 inches (32-36.8 CMs), which is roughly bigger than the chest circumference of 12.0 to 13.0 inches (30-33 CMs); and, they will be equalized between the age of six months and two years.

As in Table 1 the mean and standard deviation of test populace the anticipated Weight 3.356 kg 0.51 2, Height 48.785 Cm 2.57 3, anticipated Head Circumference 33.824 Cm 1.55 4, and the anticipated Chest Circumference 32.699 Cm 1.87 5; and, the Gestational Age 40.078 weeks; 1.03 6 parity Numbers 2.967 times 1.51 7 Age of mother 25.748 Yrs 7.09. If the head circumference is bigger than the chest circumference by four centimeters, this implies that the head is developing speedier and demonstrates an inborn disease is there, surges collection around the brain (hydrocephalus), wounds or bursts by vacuums of forceps, etc.

The bulky head circumference may well be normal, but the less than 32 centimeters may be risky and suspicious for microcephaly which generally related with fetal disease, inherent issues and chromosomal disarranges. The unequal development limitation: child with ordinary head circumference and little chest circumference

ordinarily seen with high blood pressure or with kidney illnesses, lack of healthy sustenance which is related with poor families. Too, the proportion of head and chest circumference are valuable guides for the appraisal of growth failure due to malnutrition[1,7,22].

Table 1. Mean and standard deviation of sample population

No.	Items	Mean	Standard Deviation
1.	Expected Weight	3.356 kg	0.51
2.	Expected Height	48.785 Cm	2.57
3.	Expected Head Circumference	33.824 Cm	1.55
4	Expected Chest Circumference	32.699 Cm	1.87
5.	Gestational Age	40.078 weeks	1.03
6.	Parity Numbers	2.967 times	1.51
7.	Age of mother	25.748 Yrs	7.09

Table 2 shows the measures of skewness and kurtosis reflect that the presumptions of normality are generally substantial. The skewedness esteem indicates the symmetry of the dispersion; and, the kurtosis gives data approximately the 'pawedness' of the conveyance. On the off chance that the dispersion is superbly typical, both values of skewness and kurtosis will be around (zero) which is able be troublesome to see within the social sciences. The positive skewedness value of gestational age and the parity numbers 0.596 and 0.512 individually demonstrate that the results are skew (scores clusters to the left and the low values). And, the negative skewness at the age of the mother's level demonstrates the clustering results scores to the right end.

The positive kurtosis values demonstrate that the normality of distribution of the outcome variable are maybe crested and clustered within the center with long tails. All values of the outcomes are underneath (zero) which demonstrates that the distribution is generally flat, and numerous cases within the extremes as within the cases of height and weight (Figure 1). This will not make any substantive distinction and influence the investigation since the sample of the study is large (970)23,24.

The linear relationship between birth weight and gestational age is emphatically connected at each of number of pregnancies to begin with, second and fifth, (Figure 1, A). For both genders illustrate the middle agreeing to number of pregnancies in connection to gestational age of the embryo, the birth weight in both genders appears to have nearly the same arrange of increment. It has been found that the birth weight of genders is for all intents and purposes indistinguishable until 36-37 weeks of incubation, at that point a common increment was witnessed; head and chest circumferences are topically indistinguishable for sex (Finger 1: C&D).

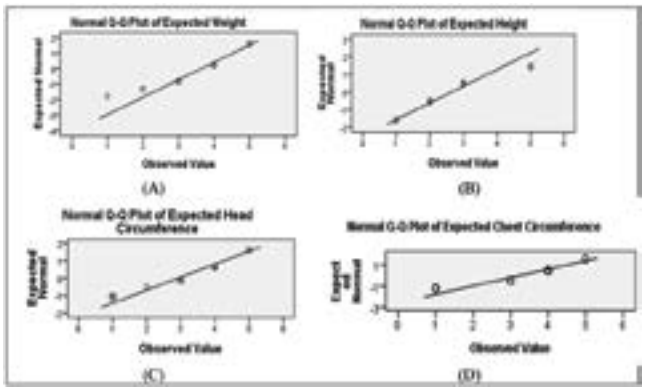

Figure 1. Estimates of Linearity diagnostics on the effect of gestational age, parity numbers and age of the mother over the newborn's weight, height, head and chest circumference.

Table 2. Descriptive statistics independent (predictive factors) variables

	N	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Gestational Age	970	40.078	1.03	.596	.241	-1.040	.478
Parity Numbers	970	2.967	1.51	.512	.241	-1.173	.478
Age of mother	970	25.748	7.09	-.117	.241	-1.631	.478
Valid N (list-wise)	970						

The linear relationship between pregnancy number and birth measures is another truth which is illustrated over, i.e., by expanding the number of pregnancies one should anticipates the increment in birth weight[23,24].

7. Results

To check the effect of n = 3 (gestational period, parity and age of mother) on m = 4 (weight, height, head and chest circumference), the multicollinearity test was made and appeared the taking after Variance Inflation Factor (VIF) and the tolerance Table 3

Table 3. Multicollinearity test

No	Independent Variables	VIF	Tolerance	Dependent Variable
1.	Gestational period	3.183	0,314	weight, height, head and chest circumference
2.	Parity	4.231	0.236	
3.	Age of mother	1.940	0.515	

Table 3 shows that all VIF (1/tolerance) are below 10, and the tolerance rate are above 0.1 which means that there were no problems collinearity as part of the multiple regression. The tolerance (1-R^2) values in Table 3 showed that the multiple correlation with other variables is not high which make no rooms for multicollinearity problems. The values of the independent variables of gestational period and age of the mother 0.314, parity 0.236 and 0.516 respectively are quite respectable in each case, so assumptions were not violated.

A standard multibed regression was used as a technique to explore the relationship between one continuous dependent variable and several independent variable or predictions. All the predictors were entered into the equation simultaneously; and, each of the independent variables is evaluated in terms of its predictive power to know how much variance and the relative contribution in a dependent variable. Table 4 showed the overall relation between the predictors together with the dependent variables is relatively strong where R = 0.741. Where by R^2 change value is 0.549 which means that all predictors together explain 54.9% of the variance in perceived outcomes (weight, head and chest circumference). Also, there is a statistically significant contribution as indicated by 0.002, 0.008, 0.011 respectively. The ANOVA indicates that the model is significant F-Value = 44.237. To know how much each of the predictors contributes to the outcomes, the beta values represent the unique contributions of each variable: the power of gestational period parity and age of the mother contribution over all outcomes are: 0.209, 0.38, 0.172 respectively which means a change (increase, decrease) in gestational period parity and age of the mother in one extra unit will lead to change in head and chest circumference, height and weight by 0.2, 008, and 0.011 units (cm, kg) etc.

Table 4. Multiple regressions: (Model Summary, ANOVA, Coefficients) the effect of certain maternal predictors on the averages of outcome variables

Variables		β Coefficient	t-statistics	P (probability)
Cons.		1.431	5.619	0.000
Gestational period		0.209	1.993	0.002
Parity		0.318	2.720	0.008
Age of mother		0.172	2.604	0.011
R	R^2	Adjusted R^2	F-Value	Sig. P-Value
0.741	0.549	0.537	44.237	0.000

A high significant at (0.000) relationship between the length of gestation and the weight of the fetus. Where β Coefficient is 0.601 that means the power of change to the effect of gestation period on the weight of the fetus is 60% and the other 40% of change may be affected by other variety of factors that are not predicted in this study; and may be of importance to the validity and development of those born at term.

As in Table 5 All predictors (Gestational period, parity and age of the mother) were entered into the equation simultaneously; and, each of the independent variables is evaluated in terms of its predictive power to know how much variance and the relative contribution on the weight of the fetus.

Table 5 showed the overall relation between the predictors together with the dependent variables is relatively weak where R = 0.43. Where by R^2 change value is 0.11. This means that all predictors together explain 34% of the variance in perceived weight. Also, there is a statistically significant contribution as indicated by 0.000, 0.01, 0.000 respectively. The ANOVA indicates that the model is significant F-Value = 9.29. To know how much each of the predictors contributes to the outcomes, the beta values represent the unique contributions of each

Table 5. Multiple regression: (Model Summary, ANOVA, Coefficients) the effect of gestational period, parity No. and the age of mother on the expected weight

Variables		β Coefficient	t-statistics	Probability
Cons.		1.726	6.243	0.000
Gestational period		0.601	9.190	0.000
Parity		-0.241	-2.61	0.01
Age of mother		-2.57	-3.141	0.000
R	R^2	Adjusted R^2	F-Value	Sig. P-Value
0.34	0.11	0.10	9.29	0.000

variable: the power of gestational period contribution over the weight is 0.601 which is relatively moderate and an expected change in the gestational period of one weak will lead to an increase in the fetus weight by 60% of average growth weekly rate. This can be evidenced by the value of observed t-statistics 9.190 that is above the recorded ones and highly significant below $\alpha \leq 0.05$. On the other hand, a decrease in parity No. will lead to a decrease in the weight by 0.24 or 24%. And, lastly a decrease in the age of the mother in one year will lead to a decrease in the Wright of the fetus by 2,57 or 25% of the fetus normal birth weight.

Table 6 showed the overall relation between the predictors together with the dependent variable (height) is too weak, where R = 0.24. Where by R^2 change value is 0.06. This means that all predictors together explain 6% of the variance in perceived height. Also, there is no significant contribution as indicated by 0.220, 0.810, 0.290 respectively. The ANOVA indicates that the model is significant F-Value = 4.48, $p \leq 0.05$: which means that to reject the null hypotheses which assumed that there is no significant relationship between the predictors and the outcomes and accept the alternative hypothesis that confirms the association between them. Anyway, in this article there were 6% (R^2) of predictors together explain 6% of the variance in perceived height and the other 0.94% are due to other factors.

Few studies show some critical contrasts happened in birth weight and birth length from 35 weeks forward. The newborn children of the shorter ladies were proportionally littler than the newborn children of the taller ladies as the newborn child consider records did not differ[5,8,11,25].

Table 6. Multiple regression: (Model Summary, ANOVA, Coefficients) the effect of gestational period, parity No. and the age of mother on the expected height

Variables		β Coefficient	t-statistics	Probability
Cons.		1.692	7.004	0.150
Gestational period		-.0.27	-3.09	0.220
Parity		-0.30	-3.16	0.810
Age of mother		0.10	1.6	0.290
R	R^2	Adjusted R^2	F-Value	Sig. P-Value
0.24	0.06	0.40	4.48	0.000

All predictors (Gestational period, parity and age of the mother) were entered into the equation simultaneously; and, each of the independent variables is evaluated in terms of its predictive power to know how much variance and the relative contribution on the head circumference of the fetus.

Table 7 showed the overall relation between the predictors together with the dependent variables is flagging, where R = 0.20. Where by R^2 change value is 0.04. This means that all predictors together explain 4% of the variance in perceived head circumference. Also, there is a statistically significant contribution as indicated by 0.000, gestational period and no other indication in parity and age of the mother 0.60, 0.080 respectively. The ANOVA indicates that the model is significant F-Value = 3.11 ($p \leq 0.05$). To know how much each of the predictors contributes to the outcomes, the beta values represent the unique contributions of each variable: the power of gestational period contribution over the weight is 0.451 which is relatively moderate and an expected change in the gestational period of one weak will lead to an increase in the fetus weight by 45% of average increase in head circumference weekly rate. This can be evidenced by the value of observed t-statistics 8.147 that is above the recorded t-value and highly significant below $p \leq 0.05$. Table 7, on the other hand, did not show any effects of parity No. and age of the mother ($p \leq 60$, $p \leq 08$ which are greater than 0.05) over head circumference.

As in Table 8, all predictors (Gestational period, parity and age of the mother) were entered into the equation simultaneously; and, each of the independent variables is evaluated in terms of its predictive power to know how much variance and the relative contribution on the chest circumference of the fetus.

Table 7. Multiple regression: (Model Summary, ANOVA, Coefficients) the effect of gestational period, parity No. and the age of mother on the head circumference

Variables		β Coefficient	t-statistics	Probability
Cons.		2.549	12.048	0.000
Gestational period		0.451	8.147	0.000
Parity		-0.09	-1.05	0.60
Age of mother		-0.16	-1.74	0.08
R	R^2	Adjusted R^2	F-Value	Sig. P-Value
0,20	0.04	0.03	3.11	0.02

Table 8 showed the overall relation between the predictors together with the dependent variables is failed, where R = 0.16. Where by R^2 change value is 0.025. This means that all predictors together do not explain any variation in perceived chest circumference. Also, there is no statistically significant contribution as indicated by 0.54 gestational periods and no other indication in parity and age of the mother 0.31, 0.60 respectively. The ANOVA indicates that the model is not significant F-Value = 1.16 ($p \geq 0.05$). Therefore, there is no correlation between the independent (gestational period, parity No. and the age of the mother) and dependent variables (chest Circumference) in this study.

Table 8. Multiple regression: (Model Summary, ANOVA, Coefficients) the effect of gestational period, parity no. and the age of mother on the chest circumference

Variables		β Coefficient	t-statistics	Probability
Cons.		2.230	6.024	0.000
Gestational period		0.05	0.62	0.54
Parity		-0.10	-1.03	0.31
Age of mother		-0.24	-5.21	0.60
R	R^2	Adjusted R^2	F-Value	Sig. P-Value
0.16	0-025	0.020	1.16	0.27

8. Conclusion

Recognizing newborn children with head, chest weight of anomalous measures required the early mediation consequently the delay makes enormous contrast within the utilitarian and mental results. In elective words, the early discovery of deviated measures of head and chest circumference help the medical professionals to put the specified therapeutic care into place.

The foremost determinant of birth weight in this article is the gestational age which encompasses a mean of 40.078, too has been found, after numerous relationships of the three indicators (gestational age, parity numbers and age of the mother) on the dependent factors (child weight, head and chest circumference, and height), of a solid free indicator of birth weight.

All the indicators (Gestational period, equality and age of the mother) were entered into the equation simultaneously; and, each of the independent variables is evaluated in terms of its predictive power to know how much variance and the relative contribution in a dependent variable. The overall relation between the predictors together with the dependent variables is relatively strong where R = 0.741. Where by R^2 change value is 0.549 which means that all predictors together explain 54.9% of the variance in perceived outcomes. Also, there is a statistically significant contribution as indicated by 0.002, 0.008, 0.011 respectively. ANOVA indicates that the model is significant F-Value = 44.237. Beta values represent the unique contributions of each variable: the power of the three predictors: gestational period parity and age of the mother influence over all outcomes is 0.209, 0.38, 0.172 respectively which means a change (increase, decrease) in gestational period parity and age of the mother in one extra unit will lead to change in head and chest circumference, height and weight by 0.2, 008, and 0.011 units (cm, kg) etc.

This article gives a substantial data for health approach and choice producer over a few maternal characteristics on the weight, head and chest circumference of the newborns within the northern portion of Jordan which clearly not accessible to bridge the gap between what need to be and the genuine far reaching appropriation of clinical services to encourage secure delivery cases in consonance with nearby and worldwide (benchmarked) criteria, decrease complications, and checking and assessing mother and child health programs.

It comes to confirm the trouble of utilizing of unsurprising standard birth measures, in the event that or maybe not connected within the packed obstetrics and gynecology words at King Abdullah the 1st Teaching Hospital at Jordan University of Science and Technology, and the rising challenges of quality assurance and accreditation requirements that JUST's Hospital have to be recognize to portray the distance between its current

circumstances and what it might have to increase the focus on quality management and improvement to develop evidence-based practice.

This article prescribes that the infant weight, head and chest circumference can be expected, from this time forward; they are fundamental pointer for mother and child health programs. Steering more scholarly insightful exercises to fortify the availability and quality of data on birth's with periodical worldwide comparisons to ensure more effective and high-quality suitable instruments. Standard upgrading clinically rules for the administrations of mother and Child health programs. Making in-service and out-service coaching programs for the health laborers to reinforce their abilities.

9. Acknowledgements

The original proposal of this article was submitted to deanship of scientific research at Yarmouk University for fund, however regrettably we have a tendency of not so succeeded. We are terribly grateful to the JUST Hospital personnel especially (Mohammad Al-Nasser and his colleagues MS and the 3rd AA registered nurses as inter-observers for physical measurement for each newly born baby which was taken basically based on the World Health Organization standards for their contributions to our approach.

10. Contribution to Authorship

AR and RT formulated the research design, prepare the data for analysis and composed the primary draft of the article. They also validate the predictors and reformulated the article plan, participated in the interpretations of the results and favoring the overall setting.

10.1 Ethical Issues

There are no ethics issues within the research. The Ethics and postgraduate studies committee in the departments of basic health sciences and public administration – faculty of medicine & faculty of economics and administrative sciences and in JUST Hospital approved the proposal of this article.

10.2 Funding

None.

10.3 NConflict of Interests

The authors declare that they have no competing interests

11. References

1. Birth Weight and Economic Growth: Women's Living Standards in the Industrializing West. Date accessed: 1993. https://press.uchicago.edu/ucp/books/book/chicago/B/bo3643410.html.
2. Incidence of Obstetric and Foetal Complications during Labor and Delivery at a Community Health Centre, Midwives Obstetric Unit of Durban, South Africa. Date accessed: 2011. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3147131/. https://doi.org/10.5402/2011/259308. PMid: 21822497, PMCid: PMC3147131.
3. Rawabdeh AA, Khassawneh AS. Health financing policies in jordan: The allocation of public expenditures in global context, Makara Journal of Health Research. 2018; 22(3):153–66. https://doi.org/10.7454/msk.v22i3.9949.
4. The Thinking Woman's Guide to a Better Birth. Date accessed: 01/08/1999. https://www.amazon.com/Thinking-Womans-Guide-Better-Birth/dp/0399525173.
5. Status of Knowledge on the Risk Factors of Low Birth Weight among the Women of Reproductive Age in Rural Bangladesh. Date accessed: 2017. https://www.omicsonline.org/open-access/status-of-knowledge-on-the-risk-factors-of-low-birth-weight-among-thewomen-of-reproductive-age-in-rural-bangladesh-2161-1165-1000292.php?aid=85889.
6. Khan A, Nasrullah FD, Jaleel R. Frequency and risk factors of low birth weight in term pregnancy, Pakistan Journal of Medical Sciences. 2016; 32(1):138–42. https://doi.org/10.12669/pjms.321.8120. PMid: 27022362, PMCid: PMC4795855/
7. Apgar V, James LS. Further observations of the newborn scoring system, American Journal of Diseases of Children. 1962; 104:419–28. https://doi.org/10.1001/archpedi.1962.02080030421015. PMid: 14013437.
8. Hassan NE, Shalaan AH, El-Masry SA. Relationship between maternal characteristics and neonatal birth size in Egypt, Eastern Mediterranean Health Journal. 2011; 17(4):281–89. https://doi.org/10.26719/2011.17.4.281. PMid: 22259885.
9. The Baby Center Essential Guide to Pregnancy and Birth: Expert Advice and Real-World Wisdom from the Top Pregnancy and Parenting Resource. Date accessed: 22/06/2005. https://www.amazon.com/Babycenter-Essential-Guide-Pregnancy-Birth/dp/1594862117.
10. Baghianimoghadam MH, Baghianimoghadam B, Ardian N, Alizadeh E. Risk factors of low birth weight and effect of them on growth pattern of children up to sixth months

of life: A cross-sectional study, Journal of Education and Health Promotion. 2015; 4(40):410–13.

11. Avery ME, Tooley WH, Keller JB, Hurd SS, Bryan MH, Cotton RB, Epstein MF, Fitzhardinge PM, Hansen CB, Hansen TN. Is chronic lung disease in low birth weight infants preventable? A survey of eight centers, Pediatrics. 1987; 79(1):26–30.
12. Apgar V, James LS. Further observations of the newborn scoring system, American Journal of Diseases of Children. 1962; 104:419–28. https://doi.org/10.1001/archpedi.1962.02080030421015. PMid: 14013437.
13. Glinianaia SV, Magnus P, Skjæven R, Bakketeig LS. The relationship between maternal birth weight and gestational age in twins and singletons and those of their offspring in Norway, Pediatric and Prenatal Epidemiology. 1997; 11(1):26–36. https://doi.org/10.1046/j.1365-3016.1997.d01-188.x. PMid: 9018725
14. Hoffman HJ, Hillman LS. Epidemiology of the sudden infant death syndrome: Maternal, neonatal, and postneonatal risk factors, Clinics in Perinatology. 1992; 19:717–37. https://doi.org/10.1016/S0095-5108(18)30427-5.
15. Johnson CD, Jones S, Paranjothy S. Reducing low birth weight: prioritizing action to address modifiable risk factors, Journal of Public Health. 2017; 39(1):122–31
16. Monjurul H. Incidence of Obstetric and Fetal Complications during Labor and Delivery at a Community Health Centre, Midwives Obstetric Unit of Durban, South Africa. International Scholarly Research Notices: Obstetrics and Gynecology; 2011. p. 259–308. https://doi.org/10.5402/2011/259308. PMid: 21822497, PMCid: PMC3147131.
17. The Birth Partner: Everything You Need to Know to Help a Woman Through Childbirth. Date accessed: 15/08/1989. https://www.amazon.com/Birth-Partner-Everything-Through-Childbirth/dp/1558320105.
18. A Case Control Study on Risk Factors Associated with Low Birth Weight Babies in Eastern Nepal. Date accessed: 11/08/2015. https://www.hindawi.com/journals/ijpedi/2015/807373/.
19. The Baby Center Essential Guide to Pregnancy and Birth: Expert Advice and Real-World Wisdom from the Top Pregnancy and Parenting Resource. Date accessed: 22/06/2005. https://www.amazon.com/Babycenter-Essential-Guide-Pregnancy-Birth/dp/1594862117.
20. The Thinking Woman's Guide to a Better Birth. Date accessed: 01/08/1999. https://www.amazon.com/Thinking-Womans-Guide-Better-Birth/dp/0399525173.
21. Status of Knowledge on the Risk Factors of Low Birth Weight among the Women of Reproductive Age in Rural Bangladesh. Date accessed: 2017. https://www.omicsonline.org/open-access/status-of-knowledge-on-the-risk-factors-of-low-birth-weight-among-thewomen-of-reproductive-age-in-rural-bangladesh-2161-1165-1000292.php?aid=85889.
22. An Introduction to Generalized Linear Models. Date accessed: 2002. https://reneues.files.wordpress.com/2010/01/an-introduction-to-generalized-linear-models-second-edition-dobson.pdf.
23. Stat Labs: Mathematical Statistics through Applications. Date accessed: 2001. http://www.stewartschultz.com/statistics/books/D.Nolan,%20T.Speed%20-%20Stat%20Labs%20-%20Mathematical%20Statistics%20Through%20Applications.pdf.
24. Regression Methods in Biostatistics: Linear, Logistic, Survival, and Repeated Measures Models (Statistics for Biology and Health). Date accessed: 2012. https://www.springer.com/gp/book/9781461413523.
25. Birth Weight and Economic Growth: Women's Living Standards in the Industrializing West. Date accessed: 1993. https://press.uchicago.edu/ucp/books/book/chicago/B/bo3643410.html.