ISSN No:-2456-2165

A Mini Review on Risk Factors of Low Birth Weight

Neeharika Ramisetty, Sam David K, P Srujana
K.L.R Pharmacy College, palwvancha,
Bhadradri district, Telangana

M. Nagaraju
Assistant Professor K.L.R Pharmacy College
palwancha , Bhadradri district,Telangana

Abstract:- Object: To review the literatures on the risk factors of low birth weight. Methods: Google, pub med are used for search of articles with relevant terms. Results: In this study, 21 articles are taken into considerations and they are clearly evaluated to draw a conclusion. Conclusions: Mothers belonging to lower socioeconomic class had higher chance of delivering low birth weight babies. Parity has a significant relationship with birth weight. There is significant association of PIH, other infections at delivery; malnutrition and anemia have a significant association with LBW.

Keywords:- *low birth weight, maternal factors, risk factors.*

I. INTRODUCTION

Low birth weight (LBW) has been defined by WHO as weight less than 2.5 kg measured within 1 hour of child birth before any postnatal weight loss has occurred[7].child's birth weight is a critical determinant of child survival, growth, development and also an important indicator of maternal health , nutrition and quality of life[7].

Depending upon birth weight and gestational age, WHO1 categorizes babies in three groups, Small for gestational age, Appropriate for gestational age and Large for gestational age. The rate of LBW is evaluated to be 16% worldwide, 7% in developed countries 19% in developing countries [22]. LBW is the main cause of infant morbidity and mortality in India [13].

As per NFHS-3 among children for whom birth weight was reported, 21.5 per cent had a low birth weight. The proportion of LBW was slightly higher in rural areas (23 %) than in urban areas (19 %) [13].

There are numerous factors associated with low birth weight. The major ones include maternal factors like socioeconomic status, calorie intake, urinary tract infection and antenatal care. Other factors include smoking, maternal age, genital infections, maternal ill health and stress [20]. If the maternal risk factors associated with low birth weight are detected early and addressed properly, the low birth weight and the consequences thereof can be reduced [5].

II. AIM

This study was done to assess the maternal and socio demographic factors associated with LBW babies, an important indicator of maternal and new-born health in India.

III. MATERIALS AND METHODS

On the Google search engine, Pub Med searching for the keywords listed below, retrieved 200 articles (28 April 2018) in Pub med and Google, from which 45 articles were selected based on title and abstract. The search of the articles was based on a clearly defined strategy .Considering factors in 45 articles, 21 articles were extracted .The search keywords: "maternal risk factors for lbw"; "low birth"; "risk factors"; "prevalence"; "incidence" for Google search engine and Pub Med; Needless to say that in the external databases, their equivalents were used (.Viz.Omni medical search.com, health line, med bio world, MDLinx.com...etc).

IV. RESULTS

The 21 articles extracted in this review were sorted out, in terms of the causes described therein, into the two categories:

- Pre-pregnancy risk factors
- Pregnancy risk factors

All the factors are categorised into these categories and detailed pictured in figure-1.

Among all these factors taken into consideration most of the articles shown increased risk factors with low birth weight and factors -mothers age, socio economic status, mother's health (PIH, other infections, Anaemia), multiple parous, nutrition are the most effecting factors of low birth weight.

As these factors show greater influence on baby's health and development, there is a need to understand these factors and their effects. Moreover each factor shows variety of outcomes based on the maternal individual health. This makes us clear that we have to understand generalised results considering this variety of factors and results in different articles.

V. DISCUSSION

A. Discussion about Family Factors :

➢ *Age*

Age serves as a major risk factor, as in the early age women body may not be ready for baring child. In women above 45 years of age there will be decrease in the hormonal levels required for the maintenance of the uterine development. All the articles containing description about age [3, 7, 8, 9, 11, 17] showed that age is a risk factor and their results Were found significant, age of the mother (< 20 yrs and > 30 yrs) was associated with prevalence of low birth weight. These articles [15, 16, and 20] reveal that increase in age of the mother reduces the risk of low birth weight. However some articles show that age is not an associated risk factor of low birth weight [1, 2, 6, and 21] which is contradictory to above articles. By above articles we can conclude that there is a high association of LBW with age of mother (below 20 years).

ISSN No:-2456-2165

➢ *Religion*

Only one article reveals that religion acts as a significant risk factor for LBW [3].LBW ranging from 2-2.5 kgs was found higher among Hindu's and 0.5 -2.0 kgs birth weight was found higher among Muslim community. In one article 2/3rd of the LBW were Hindus .Some articles do not show any significance [2, 6, 10, and 12].There is no sufficient data to individualise religion as a risk factor hence there is a need for further study.

➢ *Occupation*

Labour work or heavy work during pregnancy (labour) was found to be significantly associated [6, 11] .Two studies show that majority of the mothers in India are housewives [12, 18].

➢ *Socio-Economic Condition*

Low socio economics status was found significantly associated with LBW [1 ,4 5, 6 , 10 , 12 ,14 ,16 , 18 , 19 ,20]. Higher incidence was found in low income families but not significantly associated [11].

➢ *Education*

In Several studies there is significant association of low birth weight among illiterate women[1 ,3 , 5 ,6 , 9 ,11 ,12 ,13 , 14 ,15 , 19, 20]in contrast to one study which shows that there is no significant association with education [2].

The above factors occupation, socio–economic condition, education is correlated to each other. There by in the following studies LBW rate was found higher in mothers with lower socio economic status and low education levels.

➢ *Family type*

High prevalence of LBW was found high in joint families [12, 13]. However it was not the case in some articles [3, 6, and 19].We conclude that joint family mothers are at higher risk for LBW.

➢ *Consanguity*

There is no association with LBW and consanguity [11].There is a need of future study as it is discussed in only in one article and it is tough to come to a decision.

➢ *Residence*

A significance association was found among rural mothers among two articles [14, 15].High prevalence of LBW was found among rural mothers [12, 19] .We conclude that rural mothers are at a higher risk to deliver LBW babies.

B. Discussion about Mother herself as risk factor

➢ *Parity*

Greater Significance was found among multi parous mothers associated with LBW [1, 4, 6, 8, 9, 10, and 16]. Primi mothers were found to be at risk to deliver LBW [7].One study showed that with increased parity there is increase in birth weight [21] .Hereby we can conclude that multiple parity of mother is associated with LBW.

➢ *Abortions*

Abortions in previous pregnancies didn't have any significant influence on birth weight of babies [2, 4, 17].In contradiction to one article showed that abortions in previous pregnancy have 2.5 times higher risk of delivering LBW neonates [18] .

➢ *Height*

Incidence of LBW was high among mothers having height below 145 cms with greater significance [6 ,9 , 13 , 18].The maternal height didn't influence incidence of LBW[2 , 10, 11] in some articles. We come to a conclusion mothers with height less than 145 cm were found to be at greater risk of delivering low birth weight neonates

➢ *Low BMI*

BMI of the mother had an influence on weight and development of the child .However only one article was referring to this factor [18]. Hence it is difficult to come to a conclusion

➢ *Low body weight*

A number of article [1, 6, 11, 12, 13, 17, 18] demonstrated that low weight of the mother (<45 kg's) is a major risk factor to low birth weight of child. Weight of the mother effects the Intra uterine growth of child [9].

➢ *Tobacco usage*

Tobacco smoking is associated with adverse pregnancy outcomes because smoking during pregnancy harms both the mother and her baby. One article showed significance with tobacco usage [19].High prevalence was observed in those who are addicted to tobacco chewing [12].In contrast to above negative correlation with birth weight [4].However in two article there is no significance with tobacco addiction [8, 18].due to limited results coming to a conclusion regarding association of LBW with tobacco addiction is difficult.

➢ *Haemoglobin %*

Haemoglobin concentration is important in pregnant women which effects the baby development along with providing nutrition to baby. There is a significance association with LBW and haemoglobin per cent < 10% [3,5,6,7 ,15,17,18,20].prevalence of LBW is high in low Hb% [9 ,12, 16].No significant association was found between anaemia and LBW[11,19] in two articles. Majority of the articles conclude that low Hb% is a major risk factor associated with LBW.

C. Discussion about Pregnancy risk factor:

➢ *Supplements*

(IFA & CALCIUM): Percentage of low birth weight babies is higher in mothers who had not taken IFA [14].Inadequate intake of IFA increases the risk for low birth weight was observed in two articles [5, 16]. IFA associated with lower incidence of LBW significantly [20].Mothers taking IFA less than 100 days have 6.061 times higher odds seen in [13] one article. Taking full course of IFA have lower incidence of LBW seen in an article[15].There is no significance of IFA and CALCIUM supplement intake with lbw in contrast seen in two article [18,19].we conclude that IFA supplement intake has a strong influence on baby weight.

➢ *Nutrition (diet)*

In an article there is significant association between malnutrition with LBW [6].higher incidence of LBW was found in vegetarian diet when compared to non-vegetarian diet but no significant association with LBW [14].One of the

ISSN No:-2456-2165

article shows that good nutrition has an impact of increased birth weight [18].we conclude a nutrition had significant impact on child weight and growth and development of baby.

➢ *ANC visits*

There is no significant association with LBW and ANC visits seen in articles [3 , 10 ,11 ,15 ,17 ,18].however significant association was found between LBW and ANC visits [13 , 19 , 20]. We can say that ANC visits also acts as risk factor for LBW.

➢ *Birth interval*

One article shows that decrease in birth spacing decreases the birth weight [16].An article shows significant association with spacing of < 24 months [18]. One article show significance below 18 months [3].In contrast with these results there is an article showing no significance [17].hence no conclusion can be drawn with these.

➢ *Previous child with low birth weight*

One article showed a significant association between LBW and who had LBW in previous 2-5 pregnancies [4]. In contrast to this no significance was seen in an article [19]. We cannot draw a conclusion as limited discussion of factor. There is a significance in articles

➢ *PIH*

There is significant association with PIH and PIH acts as an independent factor during last trimester in an article [13].There is a significant association between PIH and LBW babies [5, 6, 20].there is no significance in some articles with LBW and PIH [11, 15, 17].strong association of diastolic compared to systolic seen in an article [16].we conclude that there is greater influence of PIH as a risk factor on LBW.

➢ *GDM*

No significant association was seen in two articles [8, 15]. An article show that incidence of GDM is high among study group [6].

➢ *Oligo hydraminous*

Higher LBW was seen in one article [11]. Significant association was seen in an article [6].

➢ *UTI*

One article shows no significance association [2].Another article shows UTI as a risk factor for LBW [20].we concludes to go through further study.

➢ *Other Infections at pregnancy*

Other infections such as Periodontitis is significant independent risk factor as seen in an article [2].Genital infections have positive association seen in an article [2].RHD and TB are responsible for reducing birth weight [4].an article show no significance with History of current infections [19].We concludes that other infections at pregnancy act as a risk factor for LBW.

➢ *Baby sex*

One article shows no correlation with LBW [21].there is no significant association was found in some articles [6, 8, 10, and 14]. An article shows that female neonates had 1.67 times higher risk for lbw than males [13] .There is an increase of maternal weight with male babies compared to females [16].we conclude there is no association with baby sex and LBW.

VI. SUMMARY

There are a number of articles on low birth weight risk factors in global and in India .But there is a still need of conducting further more studies in a variety of large populations to make it possible for application of results for better health care of neonates.

REFERENCES

[1]. M Sharma, D Kumar, A Huria, P Gupta. Maternal Risk Factors of Low Birth Weight In Chandigarh India. The Internet Journal of Health. 2008 Volume 9 Number 1.

[2]. Chaitanya Tellapragada, et al. Risk Factors for Preterm Birth and Low Birth Weight among Pregnant Indian Women: A Hospital-based Prospective Study. J Prev Med Public Health 2016; 49:165-175.

[3]. Madhur Borah et al Maternal and socio demographic determinants of LBW. Indian J. Prev. Soc. Med Vol. 44 No. 1-2.

[4]. Bhimwal RK et al. A study of various determinates and incidence of low birth weight babies born in Umaid hospital, Jodhpur (Western Rajasthan). Int J Contemp Pediatr. 2017 Jul; 4(4):1302-1309.

[5]. Dasgupta A. et al.Determinants of low birth weight among under- 5 children in a rural area of West Bengal. Med. Res. Chron., 2015, 2 (2), 209-216.

[6]. Prudhivi S et al. Maternal factors influencing low birth weight babies. Int J Contemp Pediatr. 2015 Nov;2(4):287-296.

[7]. Dr.P.Gunasundari et al. A Retrospective Study on Low Birth Weight and Associated Maternal Factors in a Tertiary Care Hospital at Chennai. gjra - global.

[8]. journal for research analysis Volume-5, Issue-7, July - 2016 • ISSN No 2277 – 8160.

[9]. Anand Ahankari et al. Factors associated with preterm delivery and low birth weight: a study from rural Maharashtra, India [version 1; referees: 2 approved]. F1000Research 2017, 6:72 last updated: 13 OCT 2017.

[10]. Toshniwal et al. A community based cross sectional study on the prevalence of low birth weight neonates and maternal factor responsible for the low birth weight. Asian pacific journal of health sciences, 2017; 4(3):239-244.

[11]. T. Radhakrishnan et al. Socioeconomic and Demographic Factors Associated with Birth Weight: A Community Based Study in Kerala. Indian Pediatrics 2000; 37: 872-876.

[12]. U.N Reddy et al. impact of maternal risk factors on the incidence of low birth weight neonates in southern India. Int J Med Res Health Sci. 2014; 3(4): 813-818.

[13]. Agarwal et al., Maternal Risk Factors Associated with Low Birth Weight Neonates in a Tertiary Care Hospital, Northern India. J Community Med Health Educ 2012, 2:9.

[14]. Verma R et al. Maternal determinants of low birth weight in a rural block of Haryana: a community based study. Int J Community Med Public Health. 2017 Sep;4(9):3360-3364.

[15]. Narain S et al. Socioeconomic and nutritional determinants of low birth weight babies: A hospital based

study. Indian journal of community health / vol 26 / supp 02 / dec 2014.
[16]. Bhattacharjya, et al.: Proportion of low birth weight and maternal factors. International Journal of Medicine and Public Health | Jan-Mar 2015 | Vol 5 | Issue 1.
[17]. Anshumali Jyotishi et al. Correlation of Maternal Factors with Birth Weight of Neonates of Odisha. International Journal of Physiology, January-June 2015, Vol.3, No.1.
[18]. S Ganesh Kumar et al. Determinants of Low Birth Weight: A Case Control Study in a District Hospital in Karnataka. Indian Journal of Pediatrics, Volume 77—January, 2010.
[19]. Nagargoje et al: A hospital based case control study of risk factors for low birth weight in Nagpur city of Maharashtra. Indian Journal of Community Health Vol. 22 No. 2, Vol. 23 No. 1 July 2010-June 2011.
[20]. Johnson AR et al. Low birth weight and its risk factors in a rural area of South India. Int J Community Med Public Health. 2015 Aug; 2(3):339-344.
[21]. H. Hayat et al / Epidemiology of LBW. Eastern Journal of Medicine 18 (2013) 13 -15.
[22]. Krishnan DK et al. Estimation of average birth weight in term newborns: a hospital-based study in coastal Karnataka. Int J Contemp Pediatr. 2014 Nov; 1(3):156-159.
[23]. RaviKumarBhaskar et al, A Case Control Study on Risk Factors Associated with Low Birth Weight Babies in Eastern Nepal. International Journal of Pediatrics Volume 2015.