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Descent of Fetal Head into The Pelvic Inlet in Primigravida: Systematic Review

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Abstract. Background: Skilled care before, during and after delivery can save the lives of women and newborns. Antenatal care is useful for detecting problems in pregnancy and childbirth, as well as preparing for labor. It is estimated that labor will begin 2-3 weeks after the entry of the fetal head on pelvic inlet. Objective: This study was conducted to determine the prevalence of descending of the fetal head at the pelvic inlet in the primigravida of 34-36 weeks of gestation. Methods: This study uses a systematic review study method with the data used are the results of research that have been circulating in the world. Results: In Weekes and Flynn's (1975) study, the entry of the fetal head into the pelvic cavity and having passed the pelvic inlet with a sample of 422 primigravidas, the prevalence was 34 weeks (2%), 35 weeks (1%). Of the three studies analyzed at 36 weeks' gestation, a prevalence was 4.22%.

Keyword: Fetal Head, Pelvis, Primigravida

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1. Introduction

Pregnancy and childbirth are natural (normal) processes and not pathological processes, but these normal conditions can become pathological / abnormal [1]. Primigravida is a woman who is pregnant for the first time. The first pregnancy is an experience that causes profound social and psychological changes. Pregnancy is also an early stage in a woman's life which generally causes emotional build-up.

Primigravida is one of the high-risk groups for experiencing health problems in childbirth and pregnancy. This risk is the possibility of an undesirable obstetric emergency in the future, that is, the prediction of complications in childbirth with the impact of death / illness on the mother or

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baby. The risk approach to pregnant women states that all pregnant women have a potential risk of complications in childbirth with the impact of death, morbidity, disability, discomfort and dissatisfaction [2].

In 2017, an estimated 810 women died each day as a result of preventable pregnancy and birth problems. These deaths are prevented if pregnancy health services are provided regularly with good care. Skilled care before, during and after childbirth can save the lives of women and newborns [3].

Antenatal care is a preventive effort for obstetric health care programs to optimize maternal and neonatal outcomes through a series of routine monitoring activities during pregnancy. Antenatal care is carried out to prevent and ensure that complications in childbirth can be detected early and handled properly [4]. However, only 64% of women get *antenatal care* 4 times or more during their pregnancy [5]. At each antenatal visit is recording, include: complaints of pregnant women, the results of prenatal care, assess the well-being of the fetus, at 34 weeks gestation examination fetal assessment, layout and presentation, assessment of broad pelvis [4]. Head of a fetus that has entered the pelvic inlet is a sign of the onset of labor. Generally the head of the fetus enters the pelvic inlet occurs at the end of gestation. In the primigravida, the fetal head enters the pelvis at 36 weeks of gestation [6]. According to Konar, the entry of the fetal head at the doorway of the pelvis occurs at 38 weeks of gestation. After insertion of the fetal head into pelvic inlet, it is estimated that labor will begin 2-3 weeks. Based on traditional concepts, in primigravidas the entry of the fetal head into the pelvic cavity occurs at 38 weeks of gestation. However, it is incompatible with clinical practice. In general, entry of the fetal head into the pelvic cavity occurs between 38-42 weeks or even during the first stage of labor [7]. However, in multigravida this occurs at the end of the first stage of labor.

Movement of the descending fetal head is caused by brought about by one or more of four forces: (1) pressure of the amnionic fluid, (2) direct pressure of the fundus upon the breech with contractions, (3) bearing-down efforts of maternal abdominal muscles, and (4) extension and straightening of the fetal body [8].

These signs can be detected by providing adequate and correct antenatal care so that pregnant women, families and health workers can plan and prepare for delivery and achieve a safe delivery. The objectives of this research are determine to the prevalence of descending of the fetal head at the pelvic inlet in the primigravida of 34-36 weeks of gestation.

2. Methods

This research method uses a retrospective observational study with a approach systematic review. This research was carried out by searching research journals on several international journal

databases and related journal websites. The approach used in this systematic review is a qualitative (metasynthetic) and quantitative (meta-analysis) approach to summarize and analyze the research results. The search process for literature systematic review follows the PRISMA 2009 line, namely: 1) Identification of research questions, 2) Literature search according to keywords in the database literary search(Google Scholar, Pubmed, Science direct), 3) Selection of relevant and quality research results, 4) Extraction of data from individual studies, 5) The results obtained are then summarized and analyzed, 6) Presentation of the results. Keywords using the mesh word "fetal head" AND "primigravida". The sample of this study is the literature that provides information on the descent of the fetal head at the pelvic inlet and pelvic cavity in primigravidas 34-36 weeks of gestation in full text. The data obtained were collected, then extracted by summarizing the research journal consisting of research descriptions, results and research conclusions. Data processing that will be carried out in this study is a meta-analysis study. The data were analyzed using software Review Manager 5.4 (The Cochrane Collaboration, Oxford, UK) to obtain a prevalence rate (PR), 95% confidence interval (CI). The heterogeneity between studies was estimated using the I^2 test. The research results are presented in the form of a forest plot. Several tables and explanations are also used to better support the research results and fulfill general and specific objectives.

3. Result

3.1. Identification studies

The literature search in this study *systematic review* follows the PRISMA 2009. Of the 191 literatures that were traced, 184 were obtained from Google Scholar, Pubmed, Science Direct and 7 literatures were obtained from other searches. Then 173 literatures were excluded because 22 of them were duplicated and 150 literature had discrepancies in titles. Nineteen full-text literatures were assessed for their eligibility to be studied in detail, sixteen of them were excluded because the samples and information provided did not match the inclusion criteria. The final results obtained from 3 literature that were considered to meet the inclusion criteria, the data collected were the number of primigravidas at 34-36 weeks of gestation with the fetal head entering the upper door of the pelvis and pelvic cavity (**Figure 1**).

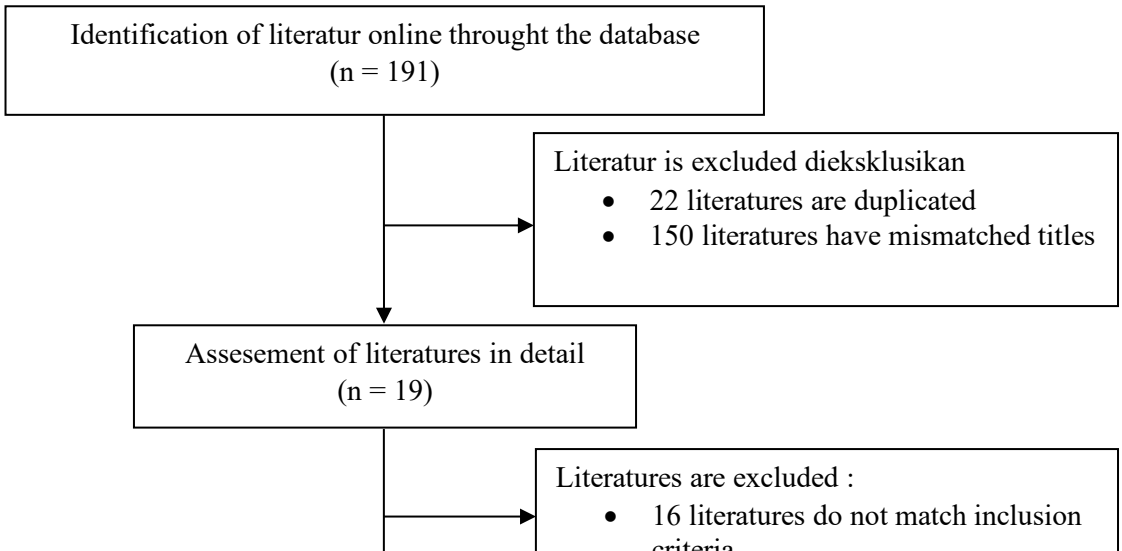


Figure 1 Literature search

3.2. Characteristic studies

A summary of the 3 eligible studies is provided in Table 1

Table 1 Characteristic studies

Studies	Authors	Origin of Study	Type of Study	Number of Sample
Study 1	Weekes and Flynn., 1975	London, England	Case control (Retrospective survey)	462
Study 2	Thenmozhi and Iyer., 1984	Neyveli, India	Cohort (Prospective study)	176
Study 3	Jafarey, SN, 1988	Karachi, Pakistan	Cross sectional	100

This study *systematic review* is expected to provide information to health workers, pregnant women and the patient's family to prepare for delivery so that a safe delivery can be achieved. The literature used is literature that has been assessed and is considered by the researcher to be close to the objectives of this study. The weakness in finding suitable journals for this research is the limitations of the authors in finding unpublished research

3.3. Research Data Extraction

Study 1 [1]

The background of this study is because clinically, fetal head involvement often does not occur at 38 weeks in primigravidas. This study was conducted to investigate the frequency distribution of fetal head involvement in primigravidas at each week of gestation and detect problems in pregnancy and delivery, and estimate the timing of labor [9]

In this study an assessment of fetal head involvement at 31-42 weeks' gestation was obtained only from 422 primigravidas. The data obtained is then presented in Table 2.

Table 2 The percentage of fetal head descent to pelvic inlet and pelvic cavity in 422 primigravidas

Fetal head in pelvic inlet and pelvic cavity	30-37 weeks	23%
	37-38 weeks	20%
	38- 42 weeks	50%
	Total	93%
Fetal head has not descent to pelvic inlet and pelvic cavity	> 42 weeks	7%

This study reported that at 30-37 weeks of age 23% of fetal heads have entered pelvic and pelvic cavity and the highest incidence 50% inclusion of fetal head in pelvic inlet and pelvic cavity occurs at 38-42 weeks of gestation.

Tabel 3 Prevalence data for fetal head entry in pelvic inlet and primigravida pelvic cavity at each week of gestation

Authors	Age of Pregnancy	Number of Events n = 422	Prevalence %
Weekes and Flynn ., 1975	31 weeks	0	0
	32 weeks	0	0
	33 weeks	0	0
	34 weeks	8	2

	35 weeks	4	1
	36 weeks	30	7
	37 weeks	55	13
	38 weeks	84	20
	39 weeks	42	10
	40 weeks	106	25
	41 weeks	42	10
	42 weeks	21	5

The number of primigravidas with fetal head entering pelvic inlet and pelvic cavity at 34 weeks of age as many as 8 people with a prevalence of 2%, at 35 weeks of age 4 people with a prevalence of 1%, age 36 weeks as many as 30 people with a prevalence of 7% and the highest number of primigravidas with fetal head entering pelvic inlet and pelvic cavity were 106 people with a prevalence of 25% occurring at 40 weeks of gestation.

Study 2

This study is based on a prospective study of 176 randomly selected primigravidas who performed antenatal clinic visits at Neyveli General Hospital, India. However, only 27 primigravidas from 36 to 42 weeks of gestation with first-time head involvement were reported in the study.

This study was made with the aim of knowing the incidence of fetal head involvement in primigravida and its effects at the onset of labor and the end of labor. Fetal head involvement is reported in terms of frequency distribution.

Table 4 Distribution of the frequency of fetal head entry in pelvic inlet and the pelvic cavity of the primigravida

Authors	Gestational Age	Number of events n = 27	Percentage %
Thenmozhi and Iyer., 1984	36 weeks	1	3.70
	37 weeks	3	11.11
	38 weeks	5	18.52
	39 weeks	7	25.93
	40 weeks	8	29.63

	41 weeks	2	7.41
	42 weeks	1	3.7

In this study it was found that at 34 and 35 weeks of gestation there are no data on the entry of fetal head in pelvic inlet and the pelvic cavity, while at 36 weeks of gestation there are found the number of primigravidas with the fetal head in the pelvic inlet and pelvis cavity as many as 1 person and obtained a prevalence of 3.70% and the highest number was 8 people with a prevalence of 29.63% occurred at 40 weeks of gestation.

Study 3

This study was conducted in Pakisatan and has become a clinical observation for researchers for some time to prove the involvement of the fetal head in primigravida during pregnancy until before delivery. This study was conducted in primigravidas to prove the clinical impression of fetal head involvement by determining the incidence of fetal head entry in pelvic inlet and pelvic cavity at 36 weeks of gestation, head involvement in early labor, duration of labor, mode of delivery and outcome of fetal condition.

Table 5 Distribution of the frequency of fetal head entry in pelvic inlet and the pelvic cavity of the primigravida

Authors	Gestational Age	Number of Samples	Number of Events	Prevalence %
Jafarey, SN, 1988	34 weeks	-	-	-
	35 weeks	-	-	-
	36 weeks	100	2	2

In Table 5, it was found that at 34 and 35 weeks of gestation there were no reports of data on the entry of fetal head in pelvic inlet and pelvic cavity while at gestational age 36 week there were 2 primigravidas with fetal head entering pelvic inlet and pelvic cavity as many as 2 people and a prevalence of 2% was found.

3.4. Synthesis of Results

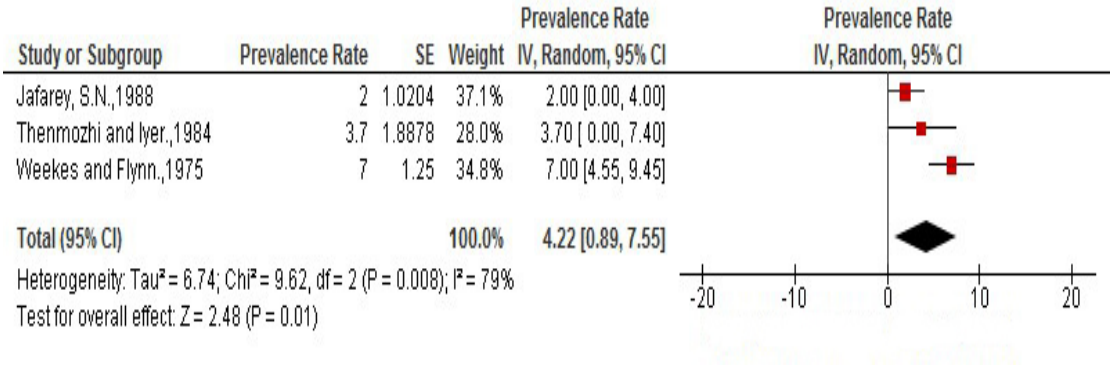
From the three studies, final data were obtained to determine the prevalence of lowering of the fetal head at the pelvic and pelvic cavity in primigravidas at 34-36 weeks of gestation, then presented in the following table and graphics *forest plot*.

Authors	Fetal Head Drops into Pelvic Inlet and Pelvic Cavity in Primigravidae Gestational Age 36 Weeks		
	Samples	Number of Events	Prevalence %
Weekes and Flynn, 1975	422	30	7
Thenmozhi and Iyer, 1984	27	1	3.70
Jafarey, SN 1988	100	2	2

Table 6 Synthesis of Result

The prevalence value of fetal head descent at the pelvic inlet and pelvic cavity in the primigravida at 36 weeks' gestation was 4.22% (95% CI, 0.89% - 7.55%). Mean while, the value of I^2 is 79%, which means that the level of heterogeneity of the study is very heterogeneous (> 75%).

Figure 2 Forest Plot



4. Discussion

In this study, by examining and synthesizing the studies that have been collected, the researchers found that the fetal head had entered the pelvic cavity and had passed through the pelvic gates at the age of 34-36 weeks. In the study of Weekes and Flynn's [9], the entry of the fetal head into the pelvic cavity and having passed the pelvic inlet with a sample of 422 primigravidas, the prevalence at 34 weeks' gestation was 2%, 35 weeks gestation was 1% and 36 weeks gestation was 7%. In the study of Thenmozhi and Iyer [10], it was found that the prevalence of fetal head entry in the pelvic cavity and having passed pelvic inlet with 27 primigravida samples, namely at 36 weeks gestation was 3.70%. In the study of Jafarey, SN [11], it was found that the prevalence at 36 weeks of gestation was 2% with a total sample size of 100 primigravidas.

5. Conclusion

1. It was found that the incidence of the entry of the fetal head in the pelvic cavity and the pelvis at 34-36 weeks of gestation. In Weekes and Flynn's (1975) study, the entry of the fetal head into the pelvic cavity and having passed the pelvic inlet with a sample of 422 primigravidas, the prevalence was at 34 weeks gestation (2%), 35 weeks (1%). Of the three studies analyzed, it was found that at 36 weeks of gestation, a prevalence was 4.22%.
2. The majority of fetal head descending the primigravida pelvic cavity occurred at 40 weeks of gestation.
3. Antenatal examinations are especially important in primigravida to prevent, detect early and properly manage complications, assess fetal development and find signs of on-going labor so as to create a safe delivery.

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