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ORIGINAL ARTICLE

Impact the Implementation of Feto-Maternaltriage Program Upon Maternal Health Outcomes in Maternity Hospitals of Baghdad City

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ABSTRACT

Triage is a major portion of clinical hazard administration in all divisions when clinical load surpasses clinical accessibility. (Jones,K 2006). Triage is used to sort, to direct requires clinical judgments and to rapidly assess a patient and assign a priority based on clinical need. Also triage considers as a fundamental cornerstone of clinical risk management (Mackway-Jones,k 2006). triage in obstetric area become one of the latest obstetric services to emerge.(PA-PSRS 2015). "In the last years, OB triage become important in the OB services in most hospitals in the world and developed a triage area adjacent to the labor and delivery department (The Pennsylvania Patient Safety Advisory 2008). According to triage protocol the women should be treated according to the severity or the acuity of the case and not the time of her arrival to the outpatient clinic.

Keyword: Triage, Obstetric Triage, Maternal Outcomes

INTRODUCTION

The triage thought that is related to obstetric care has grown up from the 1980s to 1990s. Obstetric (OB) triage units were made for different reasons, some of these reasons include increased patients' beds in the obstetrics unit, more viable usage and efficiency of staff and assets, the requirement for an elevated appraisal of fetal and maternal reconnaissance, and evaluation of work [1].Triage is a major portion of clinical hazard administration in all divisions when clinical load surpasses clinical accessibility. Crisis Triage proclaims a framework that conveys an open to instruction, auditable techniques for allotting clinical need in crisis settings. It is not intended to judge whether patients are suitably in the crisis setting, yet to guarantee that the individuals who require mind get it fittingly rapidly [2]. In the last years, OB triage become important in the OB services in most hospitals in the world and developed a triage area adjacent to the labor and delivery department. Qualified nursing personnel are needed to occupy this unit. Typically the pregnant women come to the hospital to be assessed in OB triage and transfer to the labor and delivery department if she is in labor, or evaluated and managed by an experienced health care provider if not in labor [3]. The present study as we think was conducted for the first time in Iraq and Arab countries, this idea came from many reasons, first in the recent years maternal mortality rate still high in Iraq, according to WHO and UNICEF statistics (50, 63, per 100,000 by WHO, UNICEF respectively in 2015, 2012). Also progress towards achieving the MDGs related to decrease child and maternal mortality rate is slow and uneven, and the achievement of most goals by 2015 remains a challenge and one in four delivering women faces serious complications during pregnancy. About one in 15 adult female deaths can be attributed to maternal mortality Every day, approximately 830 women die from preventable causes related to pregnancy and childbirth. 99% of all maternal deaths occur in developing countries. Between 2016 and 2030, as part of the Sustainable Development Goals, the target is to reduce the global maternal mortality ratio to less than 70 per 100 000 live births [4].

Review literature: The origin of the term of triage came from the French verb "**trier**", meaning to separate, sort, filter or select**.** During the first world war when they need to arrangement and taking care of the patient according to their injury, they need to use a new process to easiest their work and to be more efficient in giving care and treatment so the triage became known as the process to facilitate the work [5]. Dr. Jonathan Letterman, who has worked as a medical director of the Union Army of the Potomac from (July 1862 -1863) is the first one that worked on the triage categorization and formalizes it [6]**.** The concept of triage has been applied in the obstetrics area since the 1980s and early 1990s. Obstetric (OB) triage units were created according to many causes, some of which include increased number of patients entered into the obstetrics area, more successful operation and output of health care providers and sources, the need for more details assessment of fetal and mother monitoring, and assessment of entire labor [7]. In the measure, AWHONN asserted that "the triage of a pregnant woman at 20 weeks or more gestation is a brief, thorough, and systematic method to quickly determine the disposition of a woman and her fetus(es)" [8]. Jones reported that the triage is a professional assessment process that should identify the priority of the patient for clinical intervention. Smith reported that the main responsibilities of triage nurse when the pregnant women comes to the hospital are taking the specific information that include the early assessment for laboring women for physical status ,fetus status, labor status, psychological needs and review the prenatal report if available [9]. The main reasons for creating the OB triage in hospitals was the decrease the loading in a number of cases, many women should go on to houses not admitted to hospital, doing an assessment outside the labor delivery so that more freeing bed for critical cases [11]. When the Pregnant women have an urgent pregnancy problem they are going to hospital for seeking care, often without a previously scheduled appointment typically more than one-third of all laboring visits or OB visits are unscheduled [10]. Dian Angelini reported that the health care providers should be having a knowledge about the standard of care in the OB triage setting and be familiar with the rules put up by EMTALA and how it applies to pregnant women who are contracting, inactive, or undergoing transfer labor [12].

METHODOLOGY

Quazi- experimental design was conducted upon laboring women seeking for care in Baghdad hospitals The study was conducted At Baghdad hospitals, which in both sides Al-Kargh (13 hospital) and Al-Resafa(23hospital). Selected 6 hospitals from This hospitals include: Alelweya teaching hospitals, Al Nuaman hospital, Ibn Al balady hospital, Baghdad Teaching hospital, Al Karah hospital and Al Yermook Hosital **.** The sample of the study consist of 280 laboring women, 140 women for each control and study group who are attending to the labor room in selected hospitals. Questionnaire format conducted as a flow sheet .It is designed and developed by the researcher depending on the feto - maternal triage index of AWHONN'S and Manchester triage system with some modification done by a researcher. The Questionnaire was consisted of five parts, which contain the following variables:

Part1: this part consisted of demographic information, chief complaint, waiting time, socioeconomic status, and residence. **Part 2**: obstetric information includes: last menstrual period, expected date of delivery, gravid, para, abortion. **Part 3: this part consists of two steps,** Clinical history and Physical examination (Maternal Vital signs, Fetal assessment: fetal heart rate, fetal movement. Uterus examination: contraction (frequency, intensity, onset), Vaginal examination: dilatation, effacement, color of vaginal discharge and, Diagnostic test: (Blood group &RH, HB level, GUE, SONAR. **Part 4:** obstetric triage, which include the five criteria that categorize the cases according to their severity as shown in **Part**

5: check list of the complications that occurs during labor and the first two hours after delivery for the mother.

Data collection was conducted through the use of the study instrument and the application of the program from 4th December /2016 to 30th November 2016.

The data were collected by the following techniques:

Process of implementing program of triage:

1. Triage was used to describe initial assessment and determination of required care
2. The patient initially outraged by the researcher and the health care provider within 5 minutes of presenting to obstetric Evaluation (OBE) Area.
3. Categorizes severity of the patient's condition based on chief complaint and assessment findings depending on the level of triage
4. Be re-assessed at prescribed times while in the waiting room.
5. Notifies provider immediately for emergent conditions or upon completion of initial triage for urgent and non urgent conditions.
6. Urgent and Non urgent patients in waiting room are re-assessed every 30-60 minutes (time related to severity category) by a health care provider to follow up by a researcher.
7. Staff with 2 health care providers at all times: 1 dedicated to initial triage, 1 to provide care for patients in evaluation bed.
8. Levels of severity for patient conditions defined.
9. Patient condition will be triaged as red, orange,yellow, green ,and blue based on reason for visit and assessment findings.
   a. Red = immediate care
   b. Orange = within 10 -15 mint
   c. Yellow = every 30 minutes
   d. Green = every hour
   e. Blue= cold cases
10. Patients sent to the waiting room will be re-evaluated
11. Documentation was on the new "OB Evaluation Triage form"Per the new policy, the following patients may go directly to their assigned room on Labor and delivery.Data are analyzed through the use of SPSS (Statistical Process for Social Sciences) version 18 And Excel packages (frequency, percentage, The kruskal-wallis test and Reliability coefficient

RESULTS

Table 1: Participants' Sociodemographic Characteristics.

List	Variables	Study Group (n = 140)		Control Group (n = 140)	
		Frequency	Percent	Frequency	Percent
1.	Age Mean (SD): * 29.85 ± 8.64				
	15-20	15	10.7	19	13.6
	21-25	40	28.6	47	33.6
	26-30	11	7.9	11	7.9
	31-35	36	25.7	33	23.6
	36-40	19	13.6	18	12.9
	41-45	19	13.6	12	8.6
2.	BMI				
	Underweight	10	7.1	17	12.1
	Normal Weight	53	37.9	53	37.9
	Overweight	61	43.6	61	43.6
	Obesity	16	11.4	9	6.4

* The mean age is the same for both groups

Table (1) reveals that the mean age for both groups is 29.85 ± 8.64. More than a quarter of participants in the study group are within the age group of (21-25) years-old (n = 40; 28.6%), followed by those who are in the age group of (31-35) years-old (n = 36; 25.7%). For the control group, more than a third are in the age group of (21-25) years-old (n = 47; 33.6%), followed by those who are in the (31-35) years-old (n = 33; 23.6%).

Concerning participants' BMI, more than two-fifths in the study group are overweight (n = 61; 43.6%), followed by those who are of normal weight (n = 53; 37.9%). For the control group, more than two-fifths in the study group are overweight (n = 61; 43.6%), followed by those who are of normal weight (n = 53; 37.9%).

Table 2: Description of Waiting Time for Both Groups

Variables	Study Group (n = 140)		Control Group (n = 140)	
	Frequency	Percent	Frequency	Percent
Waiting Time (Minutes)				
10-20	53	37.9	27	19.3
21-30	53	37.9	32	22.9
31-60	31	22.1	58	41.4
1:15-2 hours	3	2.1	23	16.4

More than a third of participants in the study group reported that the waiting time is (10-20) minutes and (21-30) minutes (n = 53; 37.9%) for each of them, followed by those who reported that the waiting time is (31-60) minutes (n = 31; 22.1%). For the control group, more than two-fifths reported that the waiting time is (31-60) minutes (n = 58; 41.4%), followed by those who reported that waiting time is (21-30) minutes (n = 32; 22.9%).

Table 3: The Differences between Study and Control Groups in waiting time.

Ranks			Chi-Square	df	Asymp. Sig.
Waiting Time	N	Mean Rank			
Study Group	140	1.32	50.000	1	.000
Control Group	140	1.68			

The mean waiting time for the control group is greater than that of the study group (1.68, 1.32) respectively. There is a statistically significant difference in the waiting time between the study and the control groups (χ^2 = 50.000, df = 1, p-value = .000). This indicates a positive influence of the program in reducing the waiting time.

Table 4:The Differences between Study and Control Groups in Terms of Level of Triage.

Variables	Sevirty Of Cases	Study group	Control group

Levels of triage		(n=140)		(n=140)	
		Frequency	Percent	Frequency	Percent
Level1	Very Urgent	44	31.4	47	33.6
Level2	Emergency	23	16.4	20	14.3
Level3	Need For following	33	23.6	33	23.6
Level4	Not urgent	10	7.1	10	7.1
Level5	Elective C/S	30	21.4	30	21.4

This table shows more than a third of participants in the study group reported that the severity of cases are very urgent and emergency cases (n = 44; 31.4%), (n=23; 16.4%) respectively for each of them. For the control group, more than half of participants reported that the severity of case is very urgent and emergency cases (n = 44; 33.6 %),(n=20;14.3) respectively, followed by those who reported that (n = 30; 21.4%) were elective C/S.

Table 5: The Differences between Study and Control Groups in Terms of Level of Triage.

Ranks			Chi-Square	df	Asymp. Sig.
Level of Triage	N	Mean Rank			
Study Group	140	1.51	3.000	1	.083
Control Group	140	1.49			

The mean triage level for the study group is greater than that of the control group (1.51, 1.49) respectively. There is no statistically significant difference in triage level between the study and the control group (χ^2 = 3.000, df = 1, p-value = .083).

Figure 1: Description Of Mothers' Complications for the study group

Figure2: Description Of Mothers' Complications for the control group

Table 5: The Differences between Study and Control Groups inTerms of Mother's Complications.

Ranks			Chi-Square	df	Asymp. Sig.
Mothers' complications	N	Mean Rank			
Study Group	140	1.60	13.755	1	.000
Control Group	140	1.40			

The mean mothers' complications for the study group is greater than that of the control group (1.60, 1.40) respectively. There is a statistically significant difference in the mothers' complications between the study and the control groups (χ^2 = 13.755, df = 1, p-value = .000). This indicates a positive influence of the program in reducing the mother complications.

DISCUSSIONS

The present study shows that the mean age for study & control groups were 29.85 ± 8.64. More than a quarter of participants in the study group are within the age group of (21-25) years-old followed by those who are in the age group of (31-35) years-old .For the control group, more than a third are in the age group of (21-25) years-old , followed by those who are in the (31-35) years-old. The mean age was **29.85 ± 8.64** for both groups. This finding agrees with the publications of WHO and the ministry of health which indicate that the peak is the reproductive age in Iraq15-45 yrs. As we are dealing with pregnant women so the age categories the peak of reproductive age groups. I didn't find in the review a similar study national and international hospitals deals with same variable or study the demographic characteristic of women when they comes to hospitals. In the study group, 27.9% are elementary school graduates and middle school graduates. For the control group, less than a third are elementary school graduates followed by those who are middle school graduates. My own explanation that early marriage age is preferable in Iraqi society. Concerning participants' BMI, more than two-fifths in the study group were overweight (43.6%), for the control group, more than two-fifths in the study group are overweight (43.6%). According to the WHO classification of pregnant women BMI the study participant suffers from increase in weight during pregnancy, which is lead to expose to many complications during pregnancy (gestational diabetes, pre-eclampsia, heavy bleeding after delivery, and wound infection, increase weight of the fetus, increase the risk of stillbirth). [11]. The Result shows that More than a third of participants in the study group reported that the waiting time is (10-20) minutes and (21-30) minutes (37.9%) for each of them, followed by those who reported that the waiting time is (31-60) minutes (22.1%). For the control group, more than two-fifths reported that the waiting time is (31-60) minutes (41.4%), followed by those who reported that waiting time is (21-30) minutes (22.9%). About third women are in a critical situation with her baby so decrease the waiting time in receiving care it's very important to decrease any complication occur during this time . Increasing the time of visit of laboring women to delivery room lead to increase the waiting time, until the doctor or specialist will be seen while in using triage about a third of participants in study group wait for only maximum 20 minutes until receiving care or starting off doing the test. Also the study reveals that there is a statistically significant difference in the waiting time between the study and the control groups (χ^2 = 50.000, df = 1, p-value = .000). This indicates a positive influence of the triage program in reducing the waiting time in OB area. This result agrees with a study conducted in The Anne Arundel Medical Center, 2012 reveals that

decreasing the time for doing the hole triage process in 20 % after training the health care provider on how doing triage .The study reported that more than a third of participants in the study group reported that the severity of cases are very urgent and emergency cases (31.4%), (16.4%) respectively for each of them. For the control group, more than half of participants reported that the severity of the case is very urgent and emergency cases (33.6 %), (14.3) respectively, followed by those who reported that (21.4%) were elective C/S. There is no statistically significant difference in triage level between the study and the control group, this mean that the triage program success in decision making in assessing the patient according to acuity level.Triage is a complex process including unreliable decision-making in an ebullient environment due to the urgency and pressure in the workplace. Placing the patient in an inappropriate triage acuity level leads to the increased mortality significantly affecting the patient's health care outcomes. Although it may be difficult in busy parts of the emergency department, it is necessary to properly evaluate the patients and classify them based on the acuity of the illness, so that it precisely reflects the severity of the illness and the patient receives safe and timely care.[13]. In 2009, the American Hospital Association reported the following survey data in which hospitals reported which triage system they used ESI (57%), 3-level (25%), 4-level (10%), 5-level systems other than ESI (6%), 2-level or other triage system (1%), no triage (1%). The Centers for Disease Control and Prevention ,National Center for Health Statistics reports national level data regarding ED visits [14], The report now categorizes arrival acuity as five levels based on how urgently patients need to be seen by the physician or health care provider and includes the following categories: "immediate (immediately), emergent (1-14 minutes), urgent (15- 60 minutes), semi-urgent (1-2 hours), and non urgent (2-24 hours)"[15]. The study& control group reported that more than half of participants 75% have a healthy maternal status. About 2.9% have an early postpartum hemorrhage, 8.6 % have emergency c/s and others stay for follow up, 1.4% has retained placental piece, maternal distress and increase 2nd stage, this resulted from the shortage of health care provider (nurses or physician) ,the crowded of and load of cases in delivery room sometimes that delay the care that the women needed no special room for triage the women immediately cause some time daily the providing care for some case in the appropriate time. The health provider may be a physician or a midwife. It may be necessary to involve other departments in the patient's care, such as radiology, for additional testing or procedures to ease the process of care and shortage the time consuming to achieve the patient need [16].There is a statistically significant difference in the mothers' complications between the study and the control groups (χ^2 = 13.755, df = 1, p-value = .000). This indicates a positive influence of the feto-maternal triage program in reducing the mother complications than the hospital protocol. These results are agreed with the researcher's hypothesis (**There is a positive correlation related to decrease maternal complication during delivery and the implement feto-maternal triage program**).

CONCLUSION

Triage program was effective in decreasing the waiting time, also shows that the positive influence of the program in triage the cases according to its severity and according to the levels used in the triage. The feto-maternal triage program was effective in improving women's health outcomes.

Recommendations: advice to establish an educational program for the medical staff (physician, nurse, midwives and even biologist who work in hospitals) to raise awareness about the triage in OB department and how to implicate in this area. To specify a special room for OB triage in the delivery also in the outpatient counseling room and supply by all instruments and devices that required for assessment and evaluation of women. Attend an efficient nursing staff and efficient number of nurses for doing the assessment while the patient waiting for counseling from the obstetrician.

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