Case Reports

How to Estimate the Number of Newborn Bed Needs in Different Hospitals in Jordan

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Abstract

Objective: To find a mechanism by which we can assess the number of incubators and cots needed in different hospitals in Jordan.

Methods: Data collected from newborn units of 23 Jordanian MOH hospitals. Directorate of Information Studies and Research collected these data in the year 2003. [1] The role of each of the following parameters calculated to find the best indicator for the number of newborn beds needed in each hospital, the number of population in that catchments area of each hospital, [2] the number of newborns delivered in that hospital, [3] number of admission to newborn units [4] and the average days of admission and occupancy rate. [5]

Results: The most important and significant parameter indicating the actual number of beds needed in newborn units in different hospitals studied, is the number of newborns delivered in that hospital per year.

Conclusion: Needs of newborn units to incubators and cots is best calculated according to the number of newborns delivered in that hospitals. The need was found to be one bed for 222-303 newborn deliveries (3.3-4.5 bed per 1000 newborn delivered per year).

Keywords: Newborn, bed needs, Jordan MOH hospitals.

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Introduction

Pediatricians are facing some problem with mothers attending the hospital for delivery regarding the availability of beds in the newborn unit especially if it is a high-risk delivery. [6] The problem starts due to the unavailability of incubators or cots in the newborn unit. Solving this problem depends on defining the most accurate way to calculate the number of beds and incubators needed to be available in each newborn unit. [7]

Accordingly, the main objective of this study was to set out criteria to determine the actual number of incubators needed per newborn unit per hospital. National and international data related to this study was visited.

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Materials and Methods

From the statistical information of 2003 Annual statistical book of MOH, the following data related to newborn units in twenty three different MOH hospitals [5 teaching, 18 periphery hospitals] in year 2003 was analyzed: [1]

1. Total number of newborns delivered in each hospital during 2003.
2. Number of newborns that need admission to newborn units during that year
3. Number of incubators per newborn unit
4. Average length of stay in the hospital
5. Occupancy rate of beds during 2003 of each neonatal unit.

Results

Total number of newborns delivered during year 2003 was 73181; of them 37615 [%51.3] in teaching hospitals and the remaining in the peripheral hospital. The average total number of admissions to the newborn units in all hospitals was 7464, i.e 102 admissions per 1000 newborn; of them 3966 [53.1%] in teaching hospitals. However, the admission rate value varies between different hospitals from 61-171 per 1000 newborn (Table 1). The total number of incubator is 212; of them 99[%46] in teaching hospitals. This means one incubator per 345 newborn or 2.9 incubator/1000 newborn (Table 2).

The actual number of newborn per incubator in different hospitals varies between 62-106. Occupancy rate of beds was 9.4%-149.5%. Average length of stay 4.4-10.7 days. The average length of stay in teaching hospitals was 9.3 days, while in other hospitals 5.1 days.

Table 1: Data related to newborn units in different MOH hospitals.

Hospital Name	*Total Newborns*	*% to total*	*No of Admission*	*% to total*	*No of Incubators*	*% to total*	*Average length of stay*	*Occupancy rate%*	*Number of newborns per incubator*
Al-Basheer	13273	*18.1%*	1377	*18.4%*	30	*14.2%*	8.9	110.40%	*442*
Al-Zarqa	7571	*10.3%*	838	*11.2%*	24	*11.3%*	9	92.50%	*315*
Al-Hussein/salt	4271	*5.8%*	394	*5.3%*	8	*3.8%*	8	106.70%	*533*
Jarash	3017	*4.1%*	395	*5.3%*	10	*4.7%*	6.1	66.30%	*301*
P.F.H./yajoz	5342	*7.3%*	429	*5.7%*	5	*2.4%*	6.3	149.50%	*1068*
Dr.Al-totanji	3758	*5.1%*	370	*5.0%*	9	*4.2%*	9.4	106.90%	*417*
Al-karak	2680	*3.7%*	*	*	12	*5.7%*	*	*	*223*
Maan	1759	*2.4%*	*	*	18	*8.5%*	*	*	*98*
Al-iman/ajlun	2356	*3.2%*	*	*	8	*3.8%*	*	*	*294*
Al-Mafraq	5326	*7.3%*	576	*7.7%*	13	*6.1%*	6.4	78.70%	*409*
P.Badea/Rahma	8742	*11.9%*	887	*11.9%*	30	*14.2%*	10.7	87.70%	*291*
Al-nadeem	3132	*4.3%*	*	*	7	*3.3%*	*	*	*447*
Queen Rania	698	*1.0%*	*	*	7	*3.3%*	*	*	*100*
Ghoor Al-safi	985	*1.3%*	*	*	4	*1.9%*	*	*	*246*
P.Raya	2431	*3.3%*	186	*2.5%*	4	*1.9%*	6.3	79.60%	*607*
Al-Ramtha	2468	*3.4%*	*	*	5	*2.4%*	*	*	*493*
Al-yarmouk	811	*1.1%*	*	*	4	*1.9%*	*	*	*202*
Abu-obaidah	1104	*1.5%*	*	*	6	*2.8%*	*	*	*184*
Al-shuuneh	1226	*1.7%*	*	*	3	*1.4%*	*	*	*408*
P.Salma	187	*0.3%*	32	*0.4%*	3	*1.4%*	5	19.40%	*62*
Mua'th bin jabal	800	*1.1%*	49	*0.7%*	0	*0.0%*	4.4	39.30%	*n/a*
P.Eiman\ma'di	1015	*1.4%*	*	*	2	*0.9%*	*	*	*507*
Al-Ruashid	229	*0.3%*	*	*	0	*0.0%*	*	*	*n/a*
Total	73181	*100%*	7464		212				

**Data not available*

Table 2: Comparison between teaching and periphery hospitals.

	no. of newborn	*%of newborn*	*no. of admissions*	*%of admission*	*no. of incubators*	*%of incubators*	*no. of incubators/ 1000 newborn*	*According to the international suggestions*
Teaching hospitals	*37615*	*51.40%*	*3866*	*51.70%*	*101*	*47.60%*	*2.6*	*4.5*
Periphery hospitals	*35566*	*49.60%*	*3598*	*49.30%*	*111*	*52.40%*	*3.1*	*3.3*

Discussion

To set the number of incubators in a newborn unit in each hospital serving a specific area of Jordan, number of population can be a guide to the number of beds needed [8] but not the most appropriate factor, due to variations in the delivery rate in the different governorates. [9] In addition, People in Jordan acquire medical care from different entities, such as MOH, Royal Medical Service, private and university hospitals. For these reasons, the number of newborns in the hospitals could be a more accurate, convincing figure.

From the analysis, there are huge discrepancies between the figures related to number of admissions, number of incubators, occupancy rate and average length of stay in different hospitals. The reason behind this is that there are two types of hospitals involved in the analysis, teaching hospitals and periphery ones. [10]

The number of admissions; length of stay and occupancy rate is higher in teaching hospitals. This can be explained due to the referrals from the periphery hospitals to teaching hospitals as a tertiary centers due to lack of resources and facilities. [11] As periphery hospitals transfer the critical cases to teaching hospitals, the new born units in those hospitals can be considered as primary care, while new born units in teaching hospitals can be considered as providing primary and intensive care. This study shows the percentage of incubator to newborn in primary care (periphery) hospitals as 3.1/1000 and 2.6/1000 in teaching hospitals. Similar researches on the showed a percentage of incubators in the primary and middle care hospitals as 3.3 /1000, and 4.5/1000 for the middle and intensive care hospitals. [12]

Based on the results of this study, recommendation can be done to redistribute and increase the number of incubators per newborn unit per hospital as the actual needs depending on the number of newborns and hospital classification.

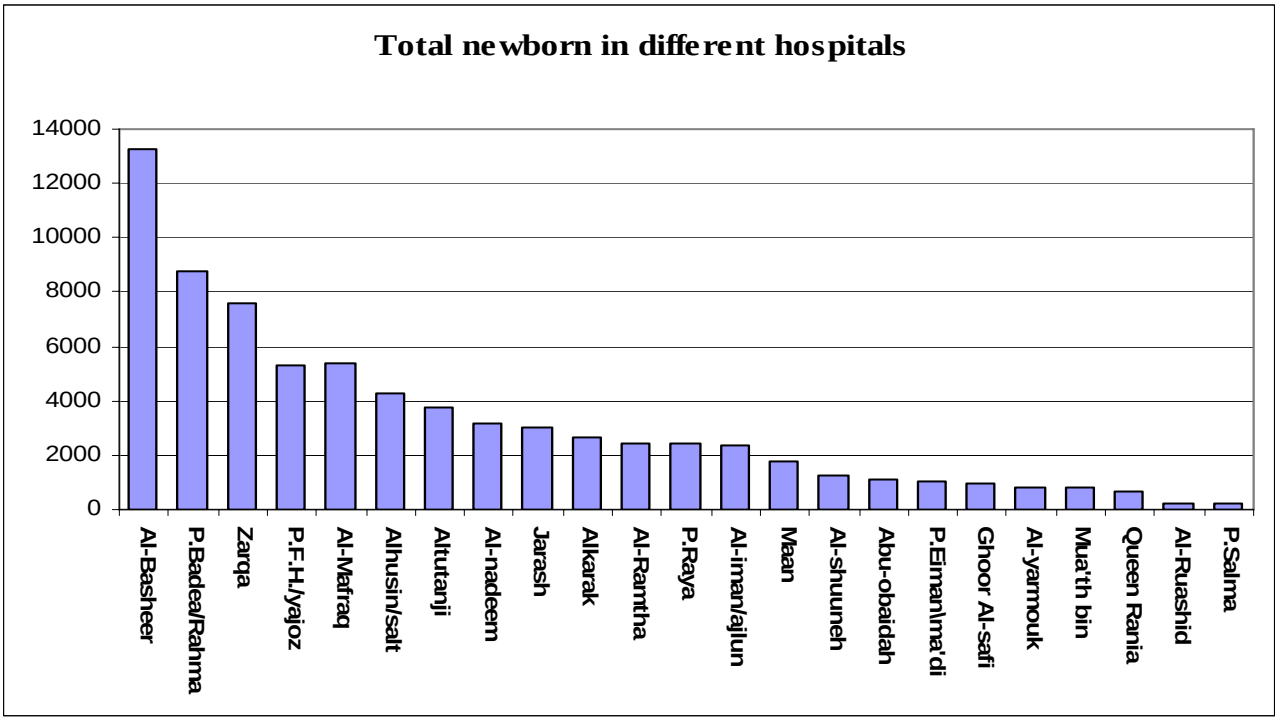

Figure 1.

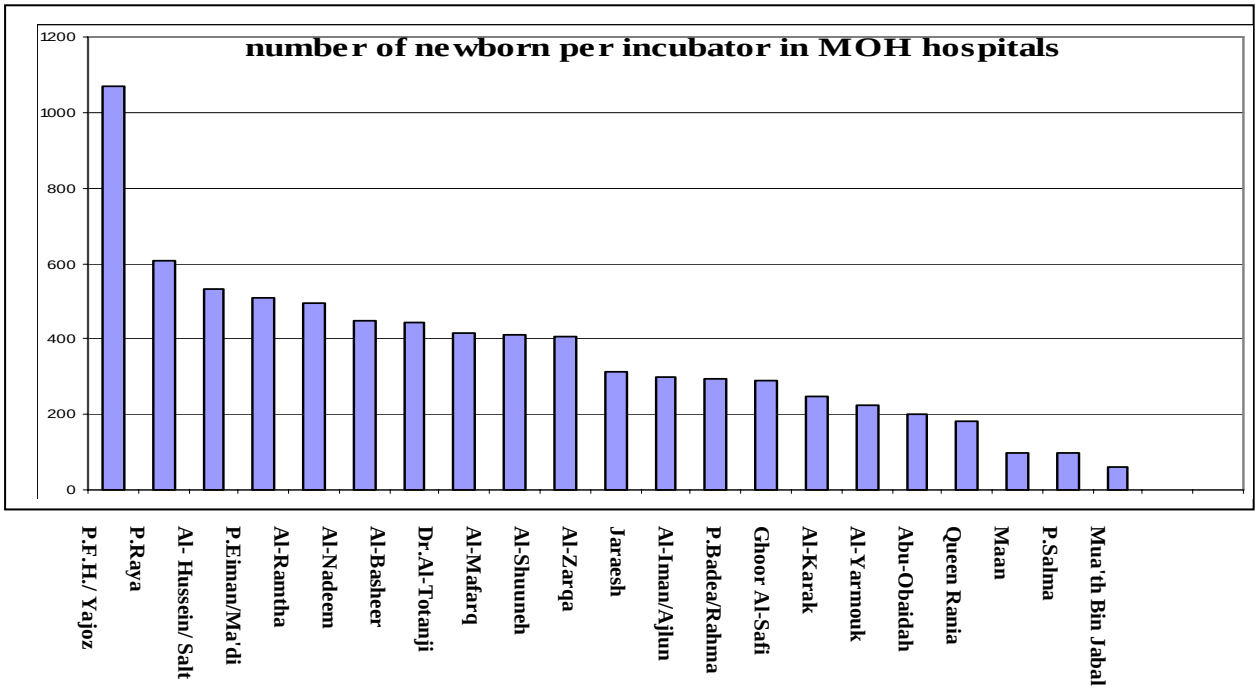

Figure 2.

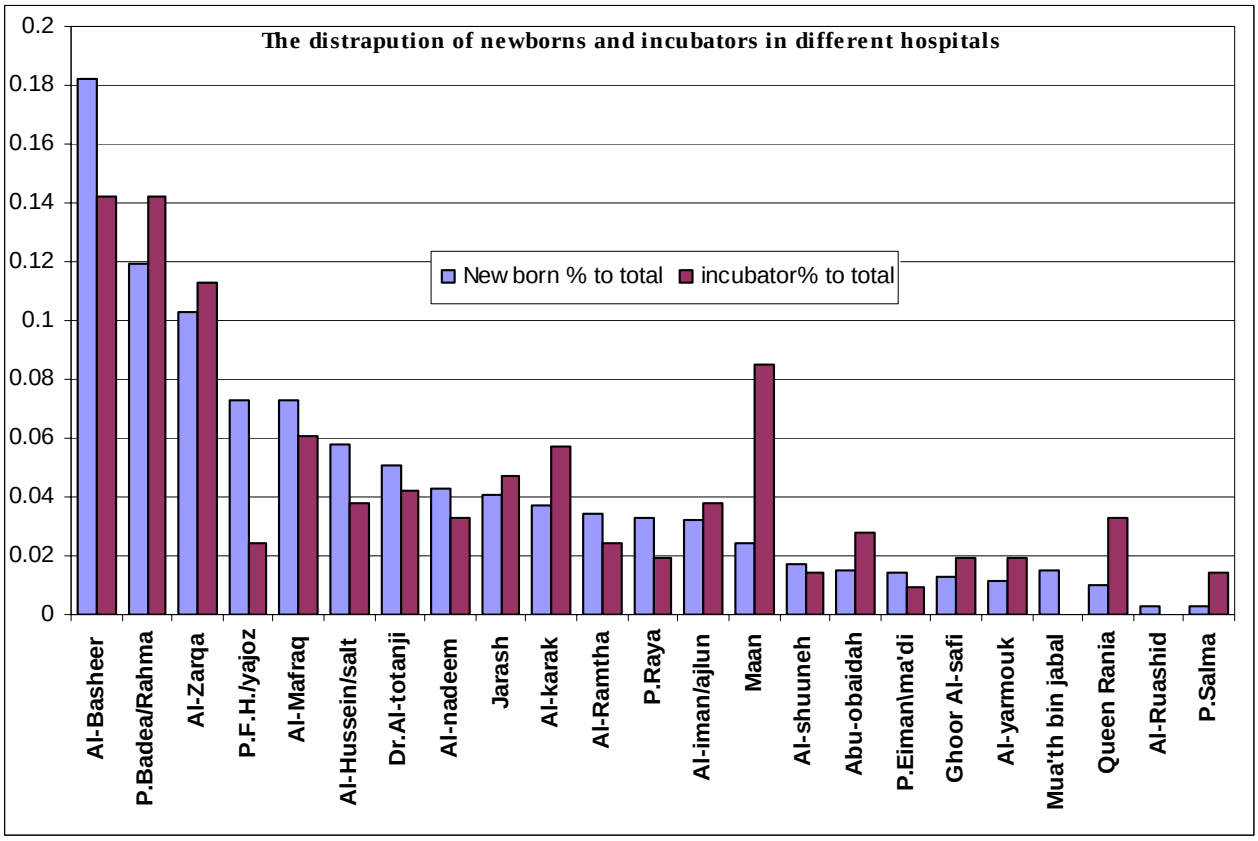

Figure 3.

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دراسة تبين الأسس الممكن اعتمادها لتقدير أعداد الحاضنات في أقسام الخداج في مختلف مستشفيات المملكة

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الملخص:

الهدف من الدراسة:

معرفة الأسس التي يمكن تطبيقها لمعرفة العدد المناسب من الحاضنات اللازمة لأقسام الخداج في المستشفيات المختلفة

الطريقة:

شملت الدراسة معلومات جمعت من 23 مستشفى من مستشفيات وزارة الصحة، وتم تصنيف أربعة منها فقط كمستشفيات تعليمية. تم تثبيت أعداد المواليد خلال عام 2003 وأعداد الأطفال المدخلين إلى أقسام الخداج وعدد أيام الإقامة وأعداد الحاضنات ونسبة الإشغال في المستشفيات التعليمية وكذلك في المستشفيات الأخرى غير المؤهلة لتدريب الأطباء من المستشفيات المشمولة بالدراسة، وتمت مقارنة النتائج بالدراسات العالمية .

النتائج:

نتيجة لتنوع التأمين الصحي ووجود أشخاص غير تابعين لأي تأمين تبقى أفضل وسيلة لتحديد احتياجات أي مستشفى هي عدد المراجعين المستفيدين من خدمات هذا المستشفى. وبناء على ذلك لوحظ أن مجموع المواليد في المستشفيات المشمولة بالدراسة 73181 مولوداً في عام 2003، ومجموع أعداد الحاضنات في هذه المستشفيات 212 حاضنة، ومجموع الإدخالات إلى أقسام الخداج في جميع المستشفيات المشمولة بالدراسة 7464 حالة وذلك يعني 102 حالة دخول من كل 1000مولود. وكان مجموع المواليد في المستشفيات التعليمية 37615 مولوداً بنسبة 51.4% من مجموع المواليد، وكان مجموع الحاضنات في المستشفيات التعليمية 101 حاضنة بنسبة 47.6% من مجموع الحاضنات، وكان مجموع الإدخالات إلى أقسام الخداج في المستشفيات التعليمية 3866 حالة بنسبة 51.7% من مجموع الإدخالات إلى أقسام الخداج، وتم تثبيت متوسط عدد أيام الإقامة في أقسام الخداج في المستشفيات التعليمية بأنه 9.3 يوم، ومتوسط عدد أيام الإقامة في أقسام الخداج في باقي المستشفيات 5.1 يوم. ونتيجة للمعلومات السابقة فإن عدد الحاضنات لعدد المواليد في المستشفيات التعليمية هو 2.6 حاضنة لكل 1000 مولود، وعدد الحاضنات لعدد المواليد في المستشفيات الأخرى 3.1 حاضنة لكل 1000مولود. وقد تم تثبيت عدد الحاضنات الموصى بها فعلا في الدراسات العالمية لأقسام الخداج في المستشفيات التعليمية بأنه 4.5 حاضنة وفي المستشفيات غير التعليمية 3.3 حاضنة لكل 1000 مولود سنويا.

التوصيات: عند التخطيط لتأسيس قسم الخداج في المستشفى يجب أن يؤخذ بعين الاعتبار عدد الولادات والتصنيف الفني في ذلك المستشفى، فيعطى 4.5 حاضنة للمستشفيات التعليمية، و3.3 حاضنة لمستشفيات الخدمات لكل 1000مولود فيها في السنة. مع ملاحظة أن هذه الزيادة في الحاضنات هي للعناية المركزة في قسم الخداج، وهذا يعني زيادة الكادر الطبي والأجهزة المساندة الأخرى، بما يتناسب مع الزيادة في الحاضنات ويؤمل أن تجرى هنالك دراسات في المستقبل لمعرفة الأعداد المناسبة من الكوادر والتجهيزات التي تتناسب وأعداد الحاضنات في أقسام الخداج.

الكلمات الدالة:

الخداج، الاحتياجات السريرية، (الحاضنات)، مستشفيات وزارة الصحة الأردنية.