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Method of Patient Classification System in obstetric staff scheduling.
II. Demand for direct nursing in the delivery room among mothers
who deliver by natural birth

The development of criteria and categories of obstetric care for women in labour in the delivery room enabled the determination of the demand for direct nursing time they are provided with by midwives (4). For this purpose, individual categories of care were ascribed activities resulting from the state of the woman at childbirth, the nursing problems diagnosed, schedule of care and doctor's orders. Due to the variability and dynamics of obstetric situations the demand for obstetric care depends, among other things, on whether the labour process takes place by natural delivery or by Caesarean section. Moreover, the reports concerning the method of Patient Classification System (PCS) indicate that the direct nursing time received by hospitalized patients is shorter than the time they should be provided with (1,2,3,5). Although this information concerned specialities other than obstetrics, the study was undertaken to determine whether these situations occurred in care of a woman in labour in a delivery room. Hence, the following research problem was posed: Are there any statistically significant differences between the time of obstetric care actually provided for mothers who deliver naturally, and the time they should be provided (model)?

MATERIAL AND METHODS

In order to formulate the answers to the research problem posed, 160 mothers who delivered naturally were kept under careful observation. They remained in the delivery room in a clinic in Lublin during the four-month period at the turn of 1999. The records were analysed concerning 527 labours which were managed in the clinic in 2000.

To determine the nursing time provided by midwives, women in labour were ascribed, in individual categories, the activities resulting from their actual demand for care (selected from among 2,812 activities measured by means of time-scheduling). It was observed that the midwives performed selected activities with a lower frequency or simplified them, therefore, the demand for the model nursing time was also calculated. This time was determined based on the scheme of care formulated for each woman in labour, with obstetric activities ascribed as well as those concerning biological

needs and psycho-social care. Model times for instrumental activities were based on data in obstetric handbooks (6, 7). Time pertaining to the psycho-social sphere depended on recognized problems of the mother and those who accompany her.

The differences between the provided and model nursing times were determined by means of statistical tests: t-Student test for equal variances, and C Cochran-Cox test when variances for the variables examined differed.

RESULTS

Category I of obstetric care covered mothers who delivered naturally, with diagnosis concerning the number of pregnancies and labours as well as the duration of the present gestation in weeks (Tab.1). The smallest value of the nursing time provided in Category I was 36.42 min/parturient, whereas the highest – 160.24 min/parturient. The mean value of the demand for direct nursing time (x) provided by midwives for women who delivered naturally in Category I of care, was (x) – 87.88* min/parturient/daily, with standard deviation (SD) = 28.3. The smallest value of a model nursing time was 56.40 min/parturient, whereas the highest – 195.59 min/parturient – in a mother who delivered for the first time within the normal period of gestation. The mean value of the model times T_{pb} was (x) - 112.54 min/parturient/daily with SD = 32.32. Statistically significant differences were determined between the provided and model nursing times ($p < 0.05$), by means of t-Student test.

While determining the demand for direct nursing time (T_{pb}) among women in labour in Category II of care, apart from provided and model nursing times, a division was also made into natural deliveries and those by planned Caesarean section.

In Category II of care, the direct nursing time provided for women who delivered naturally with respect to the time provided by midwives was (x) – 230.91 min/parturient with SD = 45.39 (Tab.2). For model time this value was (x) – 273.66 min/parturient/daily. C Cochran-Cox test was applied in order to determine the differences between the provided and model nursing times with respect to Category II of care among those who delivered naturally. Statistically significant differences were observed between these two variables ($p < 0.01$).

Category III included mothers who delivered naturally, but with considerable pathology during pregnancy accompanied by diseases of other systems (Tab. 3). In this category, the mean value of nursing time provided by midwives for women who delivered naturally was (x) – 308.37 min/parturient, SD = 20.88, whereas the model value was (x) = 328.17 min/parturient/daily, SD = 17.7. Based on statistical analysis by t-Student test, significant differences were observed between the provided and model times ($p < 0.05$).

* Data concerning seconds are expressed as the hundredth parts of a second.

Table I. Demand for direct nursing time (T_{pb}) expressed in minutes among women in Category I of care who delivered naturally

No.	Number of individual nursing chart, diagnosis	Direct nursing time	
		provided	model
1	10. Parturient G V, P V, 41 weeks	68.23	85.40
2	12. Parturient G I, P I, 40/41 weeks	57.30	76.53
3	19. Parturient G I, P I, 40 weeks	102.59	131.23
4	20. Parturient G I, P I, 40 weeks	84.33	93.55
5	21. Parturient G II, P II, 40 weeks	110.09	127.36
6	24. Parturient G III, P III, 37/38 weeks	65.46	91.29
7	25. Parturient G I, P I, 41 weeks	116.42	144.09
8	26. Parturient G I, P I, 40/41 weeks	118.05	137.16
9	28. Parturient G I, P I, 41 weeks	83.18	104.26
10	30. Parturient G I, P I, 38 weeks	92.20	117.18
11	34. Parturient G III, P III, 40 weeks	64.24	86.05
12	35. Gravida G I, P I, 40/41 weeks	62.41	80.03
13	38. Parturient G II, P II, 41 weeks	67.36	94.03
14	39. Parturient G IV, P IV, 39 weeks	36.42	56.40
15	40. Parturient G I, P I, 41 weeks	116.34	152.59
16	41. Parturient G III, P III, 41/42 weeks	68.47	95.23
17	45 Parturient G I, P I, 40/41 weeks	160.24	195.59
18	47. Parturient G III, P III, 38 weeks	90.35	126.47
19	52. Parturient G I, P I, 40 weeks	94.32	126.25
20	53. Parturient G I, P I, 39/40 weeks	99.51	130.03
Total		1757.51	2250.72
Mean T_{pb} time (\bar{x}) and standard deviation (SD) in Category II of care/parturient/daily		$\bar{x} = 87.88$ SD = 28.3	$\bar{x} = 112.54$ SD = 32.32
$t = -2.57$ (*) $p < 0.05$			

G - graviditas, P - partus

Table 2. Demand for direct nursing time (T_{pb}) expressed in minutes among women of Category II of care who delivered naturally

No.	Number of individual nursing charts, diagnosis	Direct nursing time	
		provided	model
1	1. Gravida GI, PI, 40/41 weeks. Induction of labour	146.02	246.02
2	2. Parturient GI, PI, 37/38 weeks. Outflow of amniotic fluid, lack of uterine contractions	247.51	297.00
3	4. Parturient GIII, PIII, 37 weeks. Twin pregnancy	105.13	218.42
4	6. Parturient GI, PI, 33/34 weeks. Premature outflow of amniotic fluid	290.38	315.34
5	7. Parturient GI, PI, 33/34 weeks. Premature outflow of amniotic fluid	277.47	317.46
6	11. Parturient GI, PI, 40/41 weeks. Outflow of amniotic fluid	213.26	277.31
7	13. Gravida GII, PII, 38/39 weeks. Induction of labour. Gestational diabetes	225.36	268.04
8	14. Parturient GI, PI, 40 weeks. Irregular uterine contractions	262.15	294.17
9	17. Parturient GI, PI, 39 weeks. Outflow of green amniotic fluid	235.02	265.29
10	22. Parturient GI, PI, 40 weeks. Status post removal of McDonald suture	242.36	255.01
11	29. Parturient GI, PI, 37 weeks. Pregnancy-induced hypertension	212.02	263.43
12	31. Parturient GIII, PIII, 39 weeks. Pregnancy-induced hypertension. Outflow of amniotic fluid	216.59	250.01
13	44. Parturient GII, PI, 30 weeks. Twin pregnancy	252.59	284.28
14	45. Parturient GI, PI, 40/41 weeks. Irregular uterine contractions	246.27	267.42
15	47. Parturient GIII, PIII, 38 weeks. Irregular uterine contractions	251.37	280.23
16	54. Parturient GI, PI, 39 weeks. Pregnancy-induced hypertension	249.58	275.51
17	55. Parturient GII, PI, 38 weeks. Draining of amniotic fluid	252.41	277.23
Total		3925,55	4652.17
Mean T_{pb} time (\bar{x}) and standard deviation (SD) in Category II of care/parturient/daily		$\bar{x} = 230.91$ SD = 45.39	$\bar{x} = 273.66$ SD = 24.72
C = 3.31 (**) p < 0.01			

Table 3. Demand for direct nursing time (T_{pb}) expressed in minutes among women who delivered naturally and qualified for Category III of care

No.	Number of individual nursing charts, diagnosis	Direct nursing time	
		provided	model
1	3. Parturient GI, PI, 37 weeks	298.13	315.54
2	5. Parturient GI, PI, 37/38 weeks. Outflow of green amniotic fluid	294.21	306.33
3	15. Parturient GI, PI, 37 weeks. Suspected outflow of amniotic fluid	318.47	360.52
4	27. Parturient GI, PI, 40 weeks. Schizophrenia	293.06	317.06
5	32. Parturient GII, PII, 32 weeks. Labour process reversed	269.08	305.12
6	48. Parturient GII, PII, 32 weeks. Excessive uterine contractions	304.05	329.05
7	50. Parturient GI, PI, 37 weeks. Cholesterolosis	312.39	326.39
8	56. Parturient GIII, PIII, 32 weeks. Draining of amniotic fluid	339.49	344.12
9	57. Parturient GI, PI, 39 weeks. Inability to combat pain, hysterical reactions	325.32	338.47
10	60. Parturient GII, PI, 37 weeks. Bad obstetric history	329.51	339.05
Total		3083.71	3281.65
Mean T_{pb} time (\bar{x}) and standard deviation (SD) in Category III of care/parturient/daily		$\bar{x} = 308.37$ SD = 20.88	$\bar{x} = 328.17$ SD = 17.7
$t = -2.29$ (*) $p < 0.05$			

DISCUSSION

The differences between the direct nursing time provided by midwives and the model time, present the deficit of care in individual categories. This concerns Categories I, II and III of care of women who delivered naturally, where statistically significant differences were noted between the time received by women in labour and the time with which they should be provided. A similar situation was observed among patients hospitalized in the ICU. The differences between the model time and the time received by mothers who delivered naturally allowed us to draw the conclusion that nursing time standards for obstetric care should be determined based on the model time.

CONCLUSIONS

Statistically significant differences were observed between the obstetric care time provided for women who delivered naturally and the model time, in Categories

I, II, and III of care. Hence, it may be presumed that in this group of women, the model time should constitute a basis for direct nursing time standards in Patient Classification System method.

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SUMMARY

After the development of categories and criteria of nursing mothers who give birth in the delivery room, the direct nursing time provided for women at childbirth by the midwives in individual categories of care was determined. The model time which should be provided for mothers according to their actual needs was also determined. The results of the study showed that among women who delivered naturally, statistically significant differences were observed between two variables: the nursing time provided and the model time. Hence, for women who deliver naturally it would be advisable that the nursing time standard for midwives resulted from the model times.

Metoda „Patient Classification System” w planowaniu obsad położniczych.

II. Zapotrzebowanie na pielęgnację bezpośrednią w sali porodowej rodzących siłami natury

Po opracowaniu kryteriów i kategorii opieki dla rodzących w sali porodowej określono czas pielęgnacji bezpośredniej, jaki rodzące otrzymują od położnych w poszczególnych kategoriach opieki. Wyznaczono również czas modelowy, który powinien być im oferowany zgodnie ze stwierdzonym zapotrzebowaniem. Wyniki badań wskazują na to, że w grupie rodzących siłami natury występują różnice istotne statystycznie między dwiema zmiennymi: czasem opieki świadczonym a czasem modelowym. Stąd wskazane, aby czas norm obsad dla położnych wyznaczonych dla kobiet rodzących siłami natury wynikał z czasów modelowych.