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Comparison of maternal anxiety scores in pediatric intensive care unit and general ward parents

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Abstract

Background Hospitalization of a child is known to be a dreadful and stressful situation for parents. One study reported that admitting a child to a general ward caused mild anxiety to mothers, while admitting a child to the pediatric intensive care unit (PICU) caused moderate anxiety to mothers.

Objective To compare Hamilton anxiety scores of mothers whose children were admitted to the PICU to those of mothers whose children were admitted to the general ward.

Methods A cross-sectional study was done on mothers of children aged 1 month-12 years. Children were admitted to either the intensive care unit or the general ward from October 2010-January 2011. All subjects were assessed by Hamilton anxiety scores and questioned for risk factors and other causes of maternal anxiety. Consecutive sampling was used to allocate the subjects. Differences were considered statistically significant for $P < 0.05$.

Results Of the 72 subjects, the median Hamilton anxiety score in mothers of children admitted to the PICU was 20.5 (interquartile range 14-29.75), higher than that of mothers of children admitted to the general ward (14, interquartile range 9-16.75). Mann-Whitney U test revealed a statistically significant difference in scores between the two groups ($P = 0.001$). Ancova multivariate analysis showed the admission location to be the only significant relationship to Hamilton anxiety score ($P = 0.0001$).

Conclusion Hamilton anxiety scores were higher for mothers of children admitted to the PICU than that of mothers with children admitted to the general ward. **[Paediatr Indones. 2012;52:95-8]**.

Keywords*: Hamilton anxiety score, mother anxiety, place of admission*

Hospitals are organizations with facilities to help patients improve their health, and by helping cure their physical, psychological, and social problems. But hospitals often neglect the psychological needs of parents with hospitalized children.[1] The PICU is a place for children who require intensive monitoring or invasive procedures. The mortality rate in PICUs reportedly vary from 1.5-8%.[2] If a child has to be admitted to the PICU, it is a difficult situation for parents. Fathers often worry and feel helpless, especially if they are unable to visit their children, while mothers worry about being separated from their sick children and fear the worst.[3] Board *et al*. found that mothers' anxiety was higher if their children were admitted to the PICU than if their children were admitted to the general ward.[4]

A mother's anxiety is important to consider, since her sick child may feel it. The child's fears may consequently increase, thus worsening his condition.[5] There are several methods for assessing parental anxiety when a child is admitted to the hospital,[6-8]

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including the Hamilton anxiety rating scale. This questionnaire is filled by the doctors with experience related to the conditions of the patients.[8] The aim of this study was to asses the differences in Hamilton anxiety scores between mothers whose children were admitted to the PICU and those whose children were admitted to the general ward.

Methods

This cross-sectional study was conducted at the Growth and Development Division, Department of Child Health, Udayana University Medical School, Sanglah Hospital, Bali from October 2010 to January 2011.

Seventy-two subjects who fulfilled the inclusion criteria were enrolled. Required sample size was calculated using a standard deviation of 3.94, power of 90%, $\alpha = 0.05$, and effect size of 3, resulting in a minimum of 36 subjects per group. The inclusion criteria were mothers whose children had been admitted for more than 24 hours and less than 14 days, and mothers whose children were aged 29 days–12 years. We excluded single parent mothers, mothers receiving treatment for psychiatric problems or chronic disease, mothers whose children were diagnosed with chronic disease or malignancy, and mothers who refused to participate. Consecutive sampling was used to allocate subjects. Written informed consent was obtained from all subjects. This study was approved by the Research Ethics Committee of Udayana University Medical School, Sanglah Hospital, Denpasar.

Assessment of Hamilton anxiety scores and mothers' personalities was done by psychiatry residents. Results were expressed as score numbers and the presence or absence of anxious personality. Score ranges were categorized as follows: no anxiety for total score < 14, mild anxiety for score 14–20, moderate anxiety for score 21–27, severe anxiety for score 28–41, and very severe anxiety for score 42–56.[8] Mothers were also asked about their anxiety levels.

Statistical analyses were performed using computer software version 17.0. Mann Whitney U test was used to analyze the difference of Hamilton anxiety scores between the two groups. Ancova multivariate analysis was used to analyze the influence of confounding factors between admission location and Hamilton anxiety scores. Differences were considered statistically significant if $P < 0.05$.

Results

During the study period, there were 222 pediatric patients and 72 mothers were included in our study. Of the 150 children whose mothers did not participate, 90 had chronic diseases, 59 had malignancies, and 1 child's mother refused to participate. The basic characteristics of the subjects are shown in **Table 1.**

Table 1. Baseline characteristics of subjects

	PICU (n=36)	General ward (n=36)
Mean maternal age, years (SD)	31.20 (5.96)	30.91 (7.25)
< 20 years, n	1	1
20-30 years, n	15	17
30-40 years, n	17	14
>40 years, n	3	4
Maternal education, n		
Did not graduate from elementary school	1	2
Elementary school	6	7
High school	24	26
University	5	1
Maternal occupation, n		
Housewife	17	23
Government/private employee	11	6
Entrepreneur	8	7
Child's birth order, n		
1st	18	16
2nd	11	12
3rd	6	7
4th or higher	1	1
Number of children in the family, n		
1	10	13
2	16	14
3	8	7
>3	2	2
Home location, n		
Denpasar	20	26
Outside Denpasar	16	10
Ethnicity, n		
Balinese	30	25
Non-Balinese	6	11
Payment method, n		
Private	15	17
JKBM/Jamkesmas	11	19
Jamsostek/Askes	10	0
Monthly income, n		
< 1 million Rupiah	15	14
1-2 million Rupiah	5	16
>2 million Rupiah	16	6

Table 2. Hamilton anxiety scores of the PICU and general ward groups

	PICU group (n= 36)	General ward group (n=36)	P value
Median Hamilton anxiety score, (interquartile range)	20.5 (14-29.75)	14 (9-16.75)	0.001*

* Mann-Whitney U test

Table 3. Relationship of confounding factors to Hamilton anxiety score

Variable	P*
Admission location	0.0001
Maternal age	0.264
Number of children in the family	0.909
Payment method	0.660
Home location	0.316
Ethnicity	0.612
Maternal education	0.557
Maternal occupation	0.453
Family income	0.994
Maternal personality	0.089

*Anova multivariate analysis

Hamilton anxiety scores showed abnormal data distribution by Kolmogorov-Smirnov test. To normalize the data distribution, we transformed the Hamilton anxiety scores using log 10 methods, but the data still was not distributed normally.

We found the median Hamilton anxiety score for mothers whose children were admitted to the PICU to be higher than that for mothers whose children were admitted to the general ward (20.5 vs 14, respectively), a statistically significant difference (P=0.001), as shown in **Table 2**. Ancova multivariate analysis revealed the admission location to be the only variable significantly related to Hamilton anxiety scores (P=0.001), as shown in **Table 3**. For maternal age, the median values were not significantly different between the two groups, with 31.2 years for PICU mothers and 30.91 years for general ward mothers. In addition, most patients were firstborn children and commonly had only 1 sibling in both groups. Most mothers in both groups had two children. High school was the highest educational level attained by most mothers in both groups. The most common home location was Denpasar, the most common ethnicity was Balinese, and the most common maternal occupation was housewife for both groups.

Discussion

Anxiety is an emotion experienced in situations when there is an internal or external threat to the safety of an individual or group, causing physiologic changes in the body.[9] Neuroses are marked by excessive worry and anxiety, sometimes leading to panic and often accompanied by somatic symptoms.[10] All anxiety disorders have clinical signs consisting of psychological and physical components.[11,12] Anxiety disorders are the most common psychological disorders.[13] The incidence of anxiety in women has been reported to be twice that in men.[14] Anxiety in children tends to be due to an imitation of and identification with parents, rather than genetically influenced.[15]

Parents' anxiety relative to their child's hospitalization is a common problem in daily practice, and is exacerbated if the child enters an intensive care unit. Board *et al*[4] found mothers' anxiety to be higher in a child admitted to the PICU, compared to a child admitted to the general ward. In our study we also observed higher Hamilton anxiety scores for mothers of children admitted to the PICU, compared to mothers of children admitted to the general ward (20.5 vs 14).

Hospital admission causes fear, which may eventually lead to an anxiety disorder. Hawari reported that people unable to adjust to this situation have various kinds of tension or other psychiatric problems, including anxiety.[15] We observed similar results, in that admission to an intensive care unit caused greater anxiety in mothers (at moderate levels) compared to admission to a general ward (mild anxiety).

We did not observe a significant relationship between mothers' anxiety and other possible risk factors for anxiety, including maternal age, maternal education, maternal occupation, number of children in the family, payment method, family income, location of home, ethnicity, or maternal personality.

In our study, the admission location had a statistically significant relationship to Hamilton anxiety scores for mothers (P=0.001). We found that mothers' anxiety was influenced only by admission location.

This study was limited in that we did not assess the severity of the pediatric patients' diseases/ conditions nor evaluate its effect on the parents of the hospitalized children.

In conclusion, Hamilton anxiety scores were significantly higher for mothers of children admitted to the PICU compared to those of mothers of children admitted to the general ward.

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