

Abstract

Background and objectives: Improving the quality of neonates' health is one of the important topics of healthcare that is affected by the socio-economic conditions of a society. Developed countries such as Japan have brought the neonatal mortality rate close to zero. While in low- and middle- income countries, this problem is still one of the problems of those societies. Neonatal mortality can be prevented in many cases, so finding its cause and using appropriate interventions can be very helpful in reducing this problem. Therefore, the present study has focused on the design of a model of improving the quality of neonatal health services in universities of medical sciences in Kerman and Bam.

Methods: The current study is a cross-sectional study that, according to the investigation of the causes of neonatal mortality, designed a model for improving the quality of neonatal health services in Kerman and Bam universities of medical sciences in four general stages. The first stage of an umbrella review was conducted to investigate the causes of neonatal mortality based on all systematic review articles that met the inclusion criteria. The second stage was a qualitative study in which the opinions of mothers and experts were examined, specifically, what are the causes of neonatal mortality in the studied universities. In the third stage, two Delphi stages and a survey of experts were conducted and the number of causes was reduced. The DANP method was also implemented at this stage and the relationships between the effective factors and the prioritization of the most important factors were extracted. Finally, in the fourth stage, the cause-and-effect circles were drawn with the opinion of the experts, mathematical relationships were obtained using the information of Iman and Sib systems and the information of the program and budget organization, and then the level-flow diagrams were drawn. Independent variables were identified and based on them; sensitivity analysis was performed using the Monte Carlo method. Finally, different scenarios were presented for presenting the model for improving the quality of neonatal health in Kerman and Bam universities of medical sciences.

Results: ۱۲۳۶۱ articles were extracted in the umbrella review, by checking the databases. The articles were entered into the Endnote software and ۵۳۲۴ articles were duplicates. Then the topics and abstracts of the articles were reviewed and irrelevant articles were removed, which included ۵۳۷۹ articles. ۱۹۲۸ articles were left and the full text of the articles was reviewed. At this stage, ۱۷۸۰ articles were removed as irrelevant articles. After reviewing the sources of the remaining

articles, ۱۹ related articles were added to the study. After quality assessment using the AMSTAR۲ checklist, ۹۵ articles were finally retained. In the qualitative study, a total of ۲۳۱ codes were extracted. Factors related to infant death were divided into three main categories. Among the factors related to neonates, the subcode of premature baby was the most repeated. Delphi was conducted in two stages, in which ۵۹ factors were included, and finally ۱۶ factors were extracted as the most important factors and entered the DANP stage. Among the main factors, socio-economic factors with a weight of ۰,۵۰۴ have received the most points and the results show that this factor is the main influencing factor in the death of infants in the studied area according to the experts. After that, factors related to the health care system with a score of ۰,۲۹ and finally individual factors with a score of ۰,۲۰۶ were placed in the second and third positions of the factors affecting neonatal mortality. In the current research, six variables were proposed as independent variables, and different scenarios related to the health of neonates were presented and analyzed using these six variables. The six variables proposed are: the number of active beds C۱۶, the number of specialist staff C۱۷, Number of medical equipment C۱۸, number of surfactant doses C۱۹, average household income C۲۶ and university health budget C۲۸

Conclusion: Paying attention to six independent factors can be designed in the design of the package to improve the quality of neonatal health services with the importance level in Kerman and Bam universities of medical sciences. According to the results of the previous parts of the study, the short-term influencing factors include the following:

۱. Increasing the number of NICU beds: since the occupancy rate of NICU beds in Kerman and Bam universities of medical sciences are high, and on the other hand, the number of premature births and low birth weight babies has increased, therefore allocating active beds to this department is one of the ways Short-term solutions will be to provide better and higher-quality services for neonates, which will lead to the reduction of neonatal mortality.
۲. Increasing the number of medical equipment needed, especially in the NICU of Kerman University of Medical Sciences, will be another scenario to improve the quality of neonates' health.
۳. Due to the increase in the number of premature and low birth weight babies, the administration of surfactant according to specific guidelines, especially in Kerman University of Medical Sciences, will be another important factor in improving the health status of neonates.

- ξ. It is very important to increase the number of specialists, especially in Kerman University of Medical Sciences, in this regard, planning and policy making in the field of assigning specialists to shifts, holidays and non-holidays, paying attention to human resource management issues such as motivation and the skill of personnel and specialists is important in improving the quality of neonatal health.
- ο. The increase in the university budget did not show a significant effect on the reduction of neonatal mortality in the model, especially in the Kerman University of Medical Sciences, and mainly the way the university budget is allocated will have better effects on improving the health of infants. For example, the NICU special budget law should be considered by the vice president of development and university president.

Long-term policy is related to the issue of average household income. The average household income was identified as the most important socio-economic factor, especially in Bam University of Medical Sciences in the scenarios. Therefore, policy makers and managers regarding insurance plans, nutritional support baskets jointly with other government organizations such as the governorate, the Imam Khomeini (RA) relief committee and welfare as well as non-governmental organizations and charities and benefactors in improving the health of newborns as an intervention It will be very effective in the long run. Therefore, according to the above scenarios, Kerman University of Medical Sciences should prioritize treatment and NICU, and Bam University of Medical Sciences should prioritize socioeconomic issues and pre-pregnancy and pregnancy care.

Keywords: neonatal mortality, dynamic systems, quality improvement



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