

Knowledge and Attitude among Doctors towards Use of Prophylactic Vitamin K in Neonatal Bleeding Disorders in Department of Obstetrics and Gynecology: Experience from Haj El-Safi Hospital, Sudan

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Abstract

Background: Vitamin K is crucial for neonates to prevent bleeding disorders. Raising awareness of vitamin K use would show positive outcomes. This study aimed to assess the knowledge and attitude of prophylactic use of vitamin K for bleeding disorders in neonates among doctors working in the Department of Obstetrics and Gynecology at Haj El-Safi Hospital, Sudan.

Methods: A descriptive cross-sectional study was conducted in February 2019, involving 36 doctors selected by convenience sampling. Data were collected by an interview-based questionnaire designed to measure the knowledge level of doctors toward vitamin K deficiency classification and interactions, guidelines availability and adherence, and parents counseling. Data were analyzed and presented in tables.

Results: The doctors involved in this study were 36, including 7 registrars, 6 medical officers, 23 house officers, mostly aged 20–25 years (n=29), and female (n=27). The level of knowledge about the classification of vitamin K deficiency and the interaction of vitamin K with other drugs among doctors was mostly good (n=14 and n=15, respectively). Registrars were the most in the good category (n=6, and n=7, respectively). Most doctors (n=23) were aware of vitamin K guidelines, while only 15 have continuous adherence, 16 of doctors counseled parents about the importance of prophylactic vitamin K.

Conclusion: The level of knowledge towards prophylactic vitamin K use in neonatal bleeding disorders among doctors in the Department of Obstetrics and Gynecology at Haj El-Safi Hospital is good.

Keywords: Bleeding disorder, neonate, obstetrics, vitamin K

Introduction

Neonatal prophylaxis or prevention of neonatal diseases is an essential condition of the general population and consequently reduces the costs of the health services. Vitamin K is the generic name for a family of compounds with a standard chemical structure of 2-methyl 1,4 naphthoquinone. It is a fat-soluble vitamin that is naturally present in some food and is available as a dietary supplement.¹

Also, it is a required enzyme for the synthesis of a protein involved in hemostasis and bone metabolism, and other diverse physiological functions. Also, it is crucial in reducing the risk of osteoporosis, bleeding disorders, and coronary heart disease.²⁻⁴

Vitamin K dissolves in fat and is an essential element for synthesizing clotting factors II, VII, IX, and X. Despite its importance, the human body does not store it in large quantities, and a short-life characterizes its clotting factors derivatives. So, we have to intake it sufficiently from external sources to prevent hemorrhagic disorders.⁵

There are two types of vitamin K, and the first is extrinsic K-1, which can be obtained from vegetable oils and green vegetables. The second is intrinsic K-2, which is produced by normal intestinal flora.⁶

A systematic review has shown that the best prevention of neonates from bleeding disorders is taking vitamin K intramuscularly. However, the triple doses oral regimen could

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be good alternative.⁷

Vitamin K deficiency bleeding in neonates is a relatively common problem affecting in its late form around 4.4 to 10.5 out of 100,000 in Europe and around 1 out of 6,000 in Asian countries. The neonatal mortality rate for Africa is estimated at 28 deaths per 1,000 live births.^{8,9}

Although this disease is common and sometimes causes death, its management is simple and cost effective. Increasing the awareness of this disease, therefore, will produce positive outcomes. Unfortunately, no studies in Sudan have been found. So, this study aimed to assess knowledge and attitude of using prophylactic vitamin K for bleeding disorders in neonates among doctors working in the Obstetrics and Gynecology Department, Haj El-Safi Hospital in Khartoum state, Sudan. The study is expected to come with data that may improve the strategies and plans to improve the knowledge of health personnel.

Methods

This study was a cross-sectional descriptive observational study conducted in February 2019 at Haj El-Safi Hospital, one of the biggest hospitals in North Khartoum, Sudan. The hospital had 3 Departments: Internal Medicine, Surgery, and Obstetrics and Gynecology. It contains two wards for internal medicine, four wards for surgery and one ward for obstetrics and gynecology. Bed capacity was 10 in Obstetrics and Gynecology, 24 in Internal Medicine, and 15 in Surgery. The staff in the hospital consisted of 136 doctors as a minimum. The doctors in each department were 36 in obstetrics and gynecology, 50 in medicine, and 50 in surgery.

The study population was all doctors in the Department of Obstetrics and Gynecology at Haj El-Safi hospital, whose inclusion criteria were the entire population, so there was no need for exclusion criteria since the target population had been wholly met. The sampling technique used was total sampling. This study was approached through an observational complete coverage hospital-based study, in which a total of 36 doctors participated. The researcher met all subjects (n=36) using a structured self-administered questionnaire to collect the required data.

Data collection includes demographic variables, the position (registrar, medical officer and house officer), basic knowledge, knowledge of vitamin K prophylactic questions, attitude towards vitamin K prophylactic

questions measured using a questionnaire developed by interview-based researchers. We assessed the level of knowledge by asking participants 6 questions. Knowledge of vitamin K deficiency classification and drug interaction questions were classified into good, moderate, and poor. The availability of guidelines for vitamin K use, adherence to these guidelines, and parents counseling about vitamin K were yes/no questions. Meanwhile, the source of information about vitamin K was multiple choices questions. All results were obtained according to the frequency in each answer class.

The study was approved by the Ethics Committee for research unit, School of Medicine, Ahfad University for Women, the Ethics Committee for research unit and the Ministry of Health in Khartoum state, Sudan. Verbal consents were taken from the doctors. Each doctor was informed that the data collected from this study would be used for strictly scientific purposes, and no names would appear in the questionnaire.

The data were analyzed using simple statistics through the social sciences (SPSS) package for Windows version 22 software, and the results were depicted in tables.

Results

The study showed that the doctors were mainly in the age group 20–25 years (29 out of 36) and female (27 out of 36), while according to the position, most of the doctors were house officers 23 out of 36 (Table 1).

The level of knowledge about the classification of vitamin K deficiency among

Table 1 Respondents' Characteristics

Characteristics	n
Age (years old)	
20–25	29
26–30	5
31–35	1
Above 36	1
Gender	
Male	9
Female	27
Position	
Registrar	7
Medical officer	6
House officer	23
Total	36

Table 2 Knowledge Level of Vitamin K Deficiency Classification among Doctors

Doctors	Level of Knowledge			Total
	Good (n)	Moderate (n)	Poor (n)	
Registrar	6	-	1	7
Medical officer	2	3	1	6
House officer	6	9	8	23
Total	14	12	10	36

Table 3 Knowledge Level towards Interactions of Vitamin K with Other Drugs among Doctors

Doctors	Level of Knowledge			Total
	Good (n)	Moderate (n)	Poor (n)	
Registrar	7	0	0	7
Medical officer	3	2	1	6
House officer	5	9	9	23
Total	15	11	10	36

doctors was mostly good (14 out of 36), registrars were the most in the good category (6 out of 36) (Table 2). The knowledge level of the vitamin K interaction with other drugs was also mostly good (15 out of 36); all registrars were also in the good category (7 out of 7) (Table 3).

Regarding information sources about prophylactic use of vitamin K in neonates, this study showed that most doctors (20 out of 36) got information from the university (Table 4).

Most doctors answered yes when asked about the knowledge of guidelines availability (23 out of 36), adherence to guidelines (15 out of 36), and parents counseling (16 out of 36) about the importance of prophylactic vitamin K (Table 5).

Discussion

In this study, the level of knowledge about the classification of vitamin K deficiency and the interaction of vitamin K with other drugs

among doctors was mostly good. Registrars were the position with the most in the good category. In general, registrars outperform lower positions in terms of knowledge level, and this can be attributed to their long experience and interest focused on maternal and child health. A study that included 200 dentists reported that only 23 are aware of vitamin K deficiency bleeding disorders. The vast difference in knowledge can be attributed to the difference in the target population since dentists may not face vitamin K deficiency bleeding, except as a complication.¹⁰

Also, most of the participants are aware about vitamin K guidelines in neonates compared to 38.9% of obstetric doctors in the study conducted in New Zealand.¹¹ This indicates that doctors practicing in Sudan are well updated with the new guidelines.

More than half of the respondents stated that their source of information regarding vitamin K prophylaxis was university lectures and studying for exams. At the same time, 7 out of 36 said it was self-reading, 6 out of 36 said they heard it at conferences while 3 out of 36 stated it was other sources.

As many as 15 out of 36 of the doctors indicated using vitamin K according to the guidelines. Meanwhile, 34.8% indicated occasional use of vitamin K. This might be due to differences in the patients' needs or doctor's personal opinion. According to a study conducted in New Zealand,¹¹ all the doctors and 71% of midwives emphasized the importance of vitamin K prophylaxis for newborns. Also, the study revealed that all newborns should take

Table 4 Source of Information about Prophylactic Use of Vitamin K in Neonates

Source of Information	n
University	20
Self-reading	7
Conferences	6
Others	3
Total	36

Table 5 Knowledge of Guidelines Availability, Adherence to Guidelines, and Parents Counseling on the Importance of Prophylactic Vitamin K

Question	Answer (n=36)		
	Yes (n)	No (n)	Sometimes (n)
Knowledge of guidelines availability	23	13	0
Adherence to guidelines	15	13	8
Parents counseling	16	10	10

vitamin K by unanimous doctors and 54.7% of midwives. Furthermore, all doctors and 74.2% of midwives confirmed that giving children vitamin K is the cornerstone of their clinical practice.¹¹ According to a study conducted in Slovenia, doctors applied prophylactic vitamin K to 9 out of 10 Slovene newborns and 22 out of 32 Croatian newborns. In Sudan, differences in the application of vitamin K are also found.¹²

This study found that 16 of participants answered yes to whether health care professionals counseled their patients about prophylactic vitamin K. This is an abysmal percentage because it is essential to educate the families about prophylactic vitamin K to achieve a much healthier society. This is probably influenced by the poor counseling skills of most health care professionals; due to lack of time or workload, generally, there is a bad attitude towards counseling patients in Sudanese hospitals.

In a review that discusses the main obstacles that contribute to the decrease in the use of vitamin K to prevent hemorrhagic diseases, it is found that the awareness of medical personnel is one of them. In contrast, repeated refusal of parents to give the vitamin to their babies has led to an increased rate of bleeding disorders due to vitamin K deficiency.¹³⁻¹⁵

According to a study, vitamin K is commonly given as prophylaxis after birth to prevent the newborn's hemorrhagic disease (HDN). Among infants who have not received vitamin K prophylaxis at birth, the incidence of HDN is estimated at 35 (10.5 to 80) per 100,000 live births, being lower in high-income countries at 8.8 (5.8 to 17.8) per 100,000 live births.¹⁶

In the first edition of its Pocketbook of hospital care for children, the World Health Organization (WHO) did not make a universal recommendation on routine vitamin K prophylaxis. Instead, it advised health providers to follow their respective national guidelines to decide the need for prophylaxis.¹⁷ In 2010, the WHO reviewed the available evidence on key questions, including routine vitamin K prophylaxis, to update the

recommendations in the second edition of its Pocketbook of hospital care for children.¹⁸ In comparison to this study, there are no local guidelines for vitamin K route in Sudan.

The late vitamin K deficiency burden is significant in lacking vitamin K prophylaxis at birth. Given the high risk of mortality and adverse neurodevelopmental outcomes in the survivors, 22 and 25% to 67%, respectively. In one study from Thailand,¹⁹ the burden assumes importance from a public health point of view.¹⁹ In Sudan, no study has been conducted.

According to this study, the majority of all neonates was given vitamin K prophylaxis, with over half always given intravenous route vitamin K prophylaxis.²⁰ Compared to this study, not half of the neonates were given vitamin K prophylaxis.

This study has limitations. We conducted the study in non-specialized hospital for a short time, although we need a more extensive study in Sudan. We recommend similar studies to be carried out involving more hospitals, especially specialized ones, reflecting the accurate picture of how well doctors know and are aware of the need for preventive vitamin K.

In conclusion, the level of knowledge towards prophylactic vitamin K use in neonatal bleeding disorders among doctors in the Department of Obstetrics and Gynecology at Haj El-Safi Hospital is good. Among study participants, registrars illustrated good knowledge in terms of classification and interaction of vitamin K, in contrast to medical officers and house officers who described their knowledge as poor knowledge. To better understand these attitude differences, it is necessary to improve better education and communication with professionals regarding newborn vitamin K prophylaxis. Importantly, in the future, vitamin K should be given to neonates immediately after birth.

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Conflict of Interest

The authors have no conflicts of interest to declare.

Author Contributions

Dr. Rawan Mohamed Sabri Hassan: formulated the research idea, conceived and designed the study. Dr. Abrar Bakry Malik: interpreted, analyzed the data, and wrote the initial draft. Also, revised the manuscript. Dr. Mohamed Eltayieb Elawad, Dr. Ebtihal Modather Mohammed, and Dr. Ahmed Sami Abdalla Osman: provided research materials, collected, and organized the data.

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