Awareness among the Saudi Arabian Public on the Usage of Honey among Infants: A Cross-sectional Study

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Summary
The present study seeks to evaluate the extent of the general public’s awareness of the potential hazards associated with the giving of honey to infants as well as the significance of establishing safe feeding practices among caregivers and parents. This study includes the distribution of a questionnaire to the general population resident in Saudi Arabia. The study will include individuals who are 18 years of age or older. The study and data gathering period span a duration of 12 months.

1. Introduction and Rationale:
Honey holds significant cultural, religious, and commercial importance in the historical context of Saudi Arabia, with the Holy Quran acknowledging its healing and energizing properties. Honey holds significant cultural and symbolic value in the Kingdom of Saudi Arabia, where it is extensively utilized for its therapeutic and nutritional advantages. [1]

Honey possesses various potential advantages for children and adults, such as its antimicrobial attributes, capacity to alleviate sore throats and coughs, and potential efficacy in wound healing. It is vital to acknowledge that honey needs to be used judiciously due to its elevated sugar and calorie content. In order to facilitate the growth and development of children, it is important for parents and caregivers to actively promote the consumption of a diverse selection of nutritious foods. [2]

Although it is important to note that honey can pose a potential threat to infants under the age of 12 months due to the potential danger of baby botulism, this condition, although infrequent, is a severe sickness caused by the presence of Clostridium botulinum spores in honey. In contrast, it is noteworthy that children who have surpassed the age of one year and more exhibit completely mature digestive and immunological systems, rendering them less vulnerable to the potential hazards of baby botulism that are commonly linked to the consumption of honey. [3]

The occurrence of infant botulism arises from the production of a toxin by Clostridium botulinum within the gastrointestinal tract of an infant. Clostridium botulinum, a bacterium commonly present in dust, soil, and untreated water, has the ability to generate spores and...
endure within honey. The aforementioned bacterium has the potential to induce several symptoms, including but not limited to constipation, muscle weakness, and respiratory distress. Infants below the age of one are most vulnerable to infant botulism due to their incomplete digestive systems and immature immune responses, rendering them incapable of effectively combating pathogenic germs and toxins. [4]

Due to this explanation, medical institutions, such as the American Academy of Pediatrics, prohibit the administration of honey or honey-containing products to infants who are less than one year old. A significant amount of research literature and a considerable number of reports have demonstrated a correlation between the use of honey and the occurrence of baby botulism. The aforementioned study [3] highlights the critical importance of increasing parental and caregiver awareness regarding the potential hazards of introducing honey to infants, specifically in relation to infant botulism. Furthermore, it is advisable for healthcare practitioners to provide parental and caregiver education regarding the potential hazards associated with honey consumption as well as advocate for the adoption of safe feeding protocols. [5, 6]

In light of the aforementioned research and its emphasis on health promotion and preventive measures, the present study aims to evaluate the extent of awareness of the potential dangers associated with the administration of honey to infants who are less than one year old. The objective of this research is to evaluate the level of public awareness of the potential hazards associated with the consumption of honey by infants below the age of one in the Kingdom of Saudi Arabia. The results of this study can be utilized to design educational initiatives and policy frameworks that place a high emphasis on the well-being and protection of infants.
2. Objectives:

3.1. Primary Objective
• To assess the extent of awareness of the potential hazards linked to the administration of honey to infants who are less than one year old.

3.2. Secondary Objectives
• To identify the common misconceptions and myths related to the use of honey for infants under one year of age.
• To compare awareness of using honey among infants under 12 months according to age and sex.
• To determine the prevalence of honey use among caregivers of infants under one year of age.
• To explore the factors that influence the decision to give honey to infants under one year of age.

Methods:

2.1. Study design:
The present investigation will involve the distribution of a web-based questionnaire survey directly to the general population residing in Saudi Arabia.

2.2. Study Population:
The target population will be public individuals in Saudi Arabia.

Inclusion Criteria:
• Age 18 years and above.
• Resident in Saudi Arabia
2.3. Study procedures:
We intended to create a questionnaire that was straightforward, concise, and simple for the general public. The selection of items was based on the literature review. Using Google Forms, an online English and Arabic questionnaire will be created. Respondents will receive electronic connections accompanied by the survey's objectives and an invitation to participate voluntarily. After approval by the UQU institutional research committee, the document will be electronically distributed via social media apps to all members of the public who meet the inclusion criteria. (A questionnaire (data collection sheet) is appended as an appendix.)

2.4. Study Duration/ Study Timeline:

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As shown in this table, the total duration of the study is 12 months (1 year).
2.5. **Data collection and management:**

Using an online Google Form, data will be collected and disseminated electronically in English and Arabic to the target population. The questionnaire contains the sections listed below:

1) Consent form  
2) Sociodemographic data  
3) Questions about “using” honey with infants under one year  
4) Questions about “reason” honey to infants under one year  
5) Other question

A combined system of codes, numbers, and pseudonyms will be set up to ensure the confidentiality of participants' information. Only researchers will have access to the data.

2.6. **Sample size determination:**

OpenEpi version 3.0 determined the minimal sample size required for this study. According to the General Authority for Statistics, the population of Saudi Arabia is approximately 34.81 million people. Keeping the confidence interval (CI) level at 95%, considering the anticipated percentage of frequency to be 50%, and assuming a design effect of 1 are taken into account. The calculated sample size was 384 participants.

2.7. **Statistical Analysis Plan:**

For data analysis, version 23 of SPSS will be utilized. The variables will be summarized, synthesized, and reported using descriptive statistics. Depending on the sort of distribution for each variable, numerical data will be displayed as mean, standard deviation, median, and range. For categorical variables, we will use percentages and frequencies. The Student's t-test or the Mann-Whitney test shall be utilized to compare between numerical data groups. For the association between categorical variables, a chi-square test will be conducted. A P-value is regarded as statistically significant if it is less than 0.05.
2.8. Ethical part & confidentiality:
This investigation will be submitted to the Institutional Review Board (IRB) of Umm Al-Qura University for approval. Before approval is obtained, no study activities will begin. The responses to the survey will be collected anonymously. No identifying information will be collected from participants; no private information will be collected, and all responses will be kept strictly confidential.

2.9. Publication:
Principal publication credit will be given to the principal investigator and co-investigators. Those who contributed less to the acquisition and analysis of data will be acknowledged in the manuscript.

3. Attachments (Appendices):
- The questionnaire for the study

4. References:
The questionnaire of the study:

The goal of the survey is to find out how much people in the Kingdom of Saudi Arabia know about giving honey to babies younger than 12 months.

يهدف هذا الاستبيان إلى مدى معرفة الأشخاص في المملكة العربية السعودية عن استخدام العسل للرضع دون سن 12 شهرًا.

Demographics / البيانات الشخصية

1- Age / العمر

2- place of residence/ месте الإقامة
   • Western Region / المنطقة الغربية
   • Eastern Region / المنطقة الشرقية
   • Central Region / المنطقة الوسطى
   • Southern Region / المنطقة الجنوبية
   • Northern Region / المنطقة الشمالية

3- Gender / الجنس
   • Male / ذكر
   • Female / أنثى

4- Marital status / الحالة الاجتماعية
   • Single / أعزب
   • Married / متزوج
   • Divorced / مطلق
   • Widowed / أرمل

5- Education Level / المؤهل التعليمي
   • High school graduate / ثانوي
   • Bachelor’s degree / جامعي
   • Post-graduate Degree / دراسات عليا
   • None of these options / غير ذلك
6- Are you in the field of healthcare/ هل تعمل في المجال الطبي
  - No/ لا
  - Yes/ نعم

Questions related to the study/ الأسئلة المتعلقة بالدراسة

1- Do you have children, or are you responsible for caring for them?/ هل لديك أطفال أم أنك مسؤول عن رعايتهم؟
  - Yes/ نعم
  - No/ لا

2- Do you currently have a baby who is twelve months old or younger, or are you responsible for caring for them?/ هل لديك طفل عمره 21 شهرًا أو اقل أم أنك مسؤول عن رعايتهم؟
  - Yes/ نعم
  - No/ لا

3- Do you eat honey often? Do you use it to improve your health? / هل عادة تكثر من أكل العسل؟ هل عادة تستخدمه لتحسين من صحتك؟
  - Yes/ نعم
  - No/ لا

4- Do you give honey to your children or to children for whom you are responsible?/ هل سبق أن قدمت العسل لأطفالك أو للأطفال تحت رعايتك ومسؤوليتك؟
  - Yes/ نعم
  - No/ لا

5- If the answer is “yes”, why do you give honey to children? / إذا كان الجواب نعم، انشر السبب في إعطائك العسل للأطفال /
You can choose more than one answer/ يمكنك تحديد أكثر من اختيار.
  - To make them healthier/ لتحسين صحتهم
  - To make their growth better/ لتحفيز نموهم
  - For medical treatment/ لأسباب علاجية
  - General advice from others/ بناء على نصيحة من الآخرين
  - Others/ أسباب أخرى
6- Do you give or suggest honey for babies who are 12 months old or younger? / هل سبق أن اقترحت استخدام العسل أو / قمت الترويج للرضع الذين قيل أنهم واقيين عن 12 شهرًا؟
   - Yes/ نعم
   - No/ لا

7- If the answer is “yes”, how did you give them honey? / إذا كانت الإجابة “نعم”，كيف قمت العسل؟
   - Put some honey in the water/ وضع العسل في الماء
   - Just eat the honey as is/ تناوله كما هو
   - Putting honey on the pacifiers/ وضع العسل على اللهاية

8- If the answer is “yes”, why would you use honey? / إذا كانت الإجابة "نعم”，اذكر سبب الاستخدام؟
   You can choose more than one answer/ يمكنك تحديد أكثر من اختيار
   - Tradition used/ عادات وتقاليد
   - General advice from others/ اقتراح أو توصية من الآخرين
   - health benefit (e.g., for constipation, cough, or others)/ لأسباب صحية (مثل الإمساك، السعال، أو حتى)
   - Tastes better/ لتحسين المذاق
   - Add honey to the pacifier to help the baby use it/ إضافة العسل إلى اللهاية لتقبلها
   - Others/ أخرى

9- If the answer is “no”, why do you not give or suggest honey to babies who are 12 months old or younger? / إذا كانت الإجابة "لا”，فلماذا لا تعطي أو تكرر استخدام العسل للأطفال الذين يبلغون من العمر 12 شهرًا أو أقل؟
   - because it isn’t usually used for them/ لأنه ليس من العادة استخدامه للرضع
   - because it can be harmful to them/ من الممكن أن يكون ضارًا للرضع
   - Other answer/ أخرى

10- From where do you get the information about honey use? / من هو مصدر معلوماتك عن استخدام العسل؟
   - Social media/ وسائل التواصل الاجتماعي
   - Family or friends/ العائلة أو الأصدقاء
   - Healthcare providers/ مقدم الرعاية الصحية
   - By myself/ بنفسي
   - Others/ أخرى
11 - Have you ever heard that honey is not appropriate for babies younger than 12 months?

هل سبق أن أخبرك أحدهم بأن العسل قد لا يكون مناسب للأطفال الذين تقل أعمارهم عن 12 شهراً؟

- Yes / نعم
- No / لا

12 - Any comment or suggestions?

أي ملاحظة أو اقتراحات؟

Sources of the questionnaire: