SUDDEN UNEXPECTED INFANT DEATHS INVESTIGATION IN THE MIDDLE EAST REQUIRING FURTHER ACTION

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***Abstract*—Unlike Western countries, little information available about the impact of Sudden Unexpected Infant Death (SUID) in the Middle East (ME) countries where high risk factors are very common. A structured literature review was performed to explore Sudden Infant Death Syndrome (SIDS) incidence across various ME countries, and shied lights on challenges associated with SUID investigation. The study found that data available on SUID in ME is extremely limited, however, it appears that SUID is a significant problem, could be a leading cause of mortality among infants in ME. Alarming data that sudden infant death rates could be higher than it reported. For a range of reasons, many infant deaths are registered as 'cause unknown', with no associated autopsy report or other details. Barriers to SUID reporting are linked to the regions' political systems, culture, and religion. Further action is extremely recommended to investigate cases of unexpected infant deaths.**

Keywords-component; Infant Mortality, Middle East, SIDS incidence, SUID investigation, Systematic Review.

Introduction

Sudden Infant Death Syndrome (SIDS) is the most leading cause of sudden unexpected infant deaths (SUID).[1] Literature from Western countries has shown that Western countries are aware of SIDS and many have implemented campaigns, which reduced SIDS rates dramatically.[2,3] For example, SIDS rates from 1990 to 2005 were reduced from 2.20 per 1000 live births to 0.38 in Ireland, from 2.00 per 1000 live births to 0.39 in Scotland, from 1.81 per 1000 live births to 0.32 in Australia, from 1.00 per 1000 live births to 0.23 in Sweden, and from 0.56 per 1000 live births to 0.10 in the Netherlands.[3] However, similar campaigns have not been undertaken in most of Middle East (ME) countries,[19] make a big question; how could be the SIDS rates among infants in ME. Especially due to the poverty-level living conditions and environmental factors for many in the ME region including conditions associated with war, the incidence of SIDS is likely to be well above that in Western countries and further risk linked to specific cultural practices for infant care among Middle Eastern families.[4,5,6,18] Therefore, a literature review was undertaken in order to evaluate the evidence relating to identify the incidence of SIDS, and identify issues associated with SIDS investigation in the ME societies.

The ME lies at the juncture of Eurasia and Africa and of the Mediterranean Sea and the Indian Ocean.[7] There are a 16 countries in the Middle East, including the Levant countries: Gaza, Israel, Jordan, Syria, Lebanon, and Turkey; Gulf Arab countries: Bahrain, Kuwait, Qatar, Saudi Arabia, United Arab Emirates, and Oman. Another Middle Eastern countries also include Iran, Egypt, Iraq and Yemen. The Middle East is religiously sensitive area;[7] it is the birthplace and spiritual center of religions such as Christianity, Islam, and Judaism.[7,8]

Methods

A grey literature was accessed and structured literature review was undertaken utilizing literature available between 2000 to 2015 in PUBMED, MEDLINE, CINAHL, EMBASE and Google-Scholar and associated referenced articles and grey literature within the articles. Search keywords included: SIDS in Middle East and incidence/rate/investigation. Selection of articles for inclusion were selected based on title first, abstract and finally, content of the article's relevance to the research purposes. The initial search identified a total 60 initial articles. Review of titles resulted in the selection of only 15 articles being accepted for abstract and content review.

Results

Overall, the literature provided very limited information about SIDS in the ME region, as only 15 articles provided some information, generally related to SIDS topic. Of these articles, only ten articles were addressed SIDS rate and/or investigations among ME societies. These studies were conducted in Jordan, Israel, Iraq, UAE, Saudi Arabia and Turkey.

A. SIDS incidence rates in Middle East

In 2005, a study conducted in Turkey, by Tumer, Tumer, and Bilge, determined the incidence of various causes of sudden unexpected infant deaths including SIDS and evaluated the using of autopsy in predicting a cause of death. A retrospective analysis of hospital and forensic autopsies found 67 cases of SUID in Ankara, during a 5-year period (1995-2000). Almost half (44%) of deaths were due to SIDS (9), which is high rate.

DOI: 10.5176/2345-718X_4.1.130

Furthermore, in 2008, a study conducted by Bataineh, Shawagfeh, and Twalbeh, explored cause-specific infant mortality in one of the biggest cities in Jordan. Registered infant births and deaths were reviewed over a year period (2005-2006); information was obtained from the birth and death registers and birth and death certificates for infants. In addition, household heads were interviewed with a structured questionnaire for more information. The study found over a year, there was a total of 6,078 live births. The infant mortality rate was found much high as 21.1 per 1,000 live births (128 cases); this is however, the study show that about 75% of the infant deaths were due to preventable causes.[10] SIDS rate was 1.32 per 1,000 live births, and contributed to 6% of infant mortality.[10] Considered that, there is still lack of investigation cases with unknown cause of deaths, which these could be SIDS cases.

In 2008, a study was conducted by Abdulrazzaq, Kendi, and Nagelkerke, that established the incidence of SIDS in the UAE. This study examined SIDS incidence in Al Ain city among registered infant deaths over five year period (2002-2006). Files of all infants whose deaths were recorded as SIDS or cause unknown were extracted and studied. Autopsy had been performed on all cases and only those deaths that were attributed to SIDS and met with the criteria of SIDS were included in the calculations of SIDS incidence. The study found SIDS rate 0.66 per 1,000 live births, and contributing 7.25% to the infant mortality rate in UAE.[4] Which is high rate for infant deaths, which is need more focus in Future.

In 2009, a study was conducted by Awqati, Ali, Al-Ward, Majeed, Salman, Al-Alak, and Al-Gasseer, investigated causes of infant deaths in Iraq in the period of 1994-1999, used verbal autopsy and the Demographic and Health Surveys questionnaire over interviews with mothers and caregivers of the deceased children. In this study, 40,477 households were interviewed, collected information about: number of children and their order of their births, and retrospective birth history, survivorship status, and current age or age at death for each of the respondent's live births. Information on living children was verified by requesting the civil identification cards. The parents and child caregivers were asked, using open-ended questions, about the symptoms within the two weeks preceding their child death. The study found that among 4,912 registered infant deaths over a five year period (1994-1999) in Iraq, 9% (n= 1081) were attributed to SIDS.[11] This means that around 216 infants die of SIDS each year in Iraq, with a rate of 5.0 per 1000 live births. Making SIDS is the second most frequent cause of death in Iraq.[11] Furthermore, there were 10% cases were death of unknown causes,[11] which needs further investigation as they could be SIDS cases. SIDS is the most leading cause of sudden unexpected infant deaths.[1]

In 2011, a study was conducted, by Nofal, Abdulmohsen, and Khamis, in a large university hospital in the eastern region of Saudi Arabia, it was retrospectively investigated frequency and main causes of infant deaths over a 6-year period (2000-2005). The study reviewed medical records for information about demographical data, chief complaints, clinical signs, and history of pre-existing diseases. Medical investigations and diagnosis of death were also performed. Cases arrived dead at the hospital were excluded, which is limiting the study. This is however, the study found, that over 6-year period a total of 72 infants died with SIDS in the eastern region of Saudi Arabia.[12] This means that around 12 infants die of SIDS each year only in the eastern region of Saudi Arabia. It appears that SIDS could be a major health problem threatened child survival in Saudi Arabia.

Finally, Eisenstein, Ben-Yehuda, Shemesh, and Kharasch (2012) explored issues around investigation of unexplained infant deaths including SIDS cases. While, the study was not aimed to explore SIDS incidence, it however, reported an important information gained from ' National statistics' and 'Central Bureau of Statistics' of Israel, which indicated that SIDS incidence estimated around 0.4 per 1,000 live births, and the incidence of unexplained infant deaths was approximately 0.7 per 1,000 live births annually.[13] While this is lower than other ME countries, it is still high rate for infant deaths.

B. SIDS investigations

A great concern that the limited literature on SIDS incidence in the ME does not reflect the true extent of the actual incidence of SIDS in the region; critics argue that the rates could be much higher than reported.[8-12] The discrepancy between identified rates and suspected rates are due to the limited information collected on causes of infant deaths in most ME countries.[8-14] With limited public health budgets and numerous political and social problems to address, establishing a SIDS risk factor or a reliable infant mortality reporting system has not been a priority for these countries.[3,10,11,13-15,19] It has also been suggested that the use of the code “sudden unexpected infant deaths” (SUID) as a prominent cause of death in ME countries camouflages actual SIDS cases. However, with few resources devoted to clarifying and reporting accurate causes of death, SIDS specific mortality rates cannot be teased out of the limited reported data.[9,10,13] In addition, there is little education and training of public health or medical personnel on SIDS, and insufficient laboratory investigation and health resources devoted to diagnosing SIDS in the ME.[8,9,12] It also found performing autopsy by forensic medicine specialists without pediatric expertise affect the accuracy of the investigation.[8] Finally, parents of dead infant usually oppose autopsy practice, linked to their religion faiths which also barrier SUID and SIDS investigation.[12]

Eisenstein, Ben-Yehuda, Shemesh, and Kharasch (2012), recommended developing socially acceptable methods to effectively investigate infant deaths and improving diagnosis quality for sudden unexpected infant deaths including SIDS, thus highlighted the importance of using the new technologies and commitment to allocate the necessary

resources, and support investigation these cases in the future.[13] Author, also suggested: "better cooperation between physicians, law enforcement officials and religious leaders, as well as a commitment to fund their activities, may lead to improved quality of infant death investigations".[13] Tumer, Tumer, and Bilge (2005), suggested a thorough evaluation and a detailed autopsy must be performed for each case in experienced centers.[9] Thus, performing autopsy by forensic medicine specialists with pediatric expertise will support SIDS investigation. [9]

Discussion

A. SIDS incidence

The literature review, while based on a limited number of research articles. It however, indicated that SIDS rates are alarmingly high in the ME countries, even in the wealthy countries, such as UAE and Israel. Take on consideration, that in some ME societies SIDS rates were extremely high compared to Western societies. For example, the estimated SIDS rate in Jordan around thirteen-fold exceeds the rate in a Western country like Netherlands. Thus, the current condition living associated with the war in the ME region makes it different than other place in the world. Poor condition living is highly associated with SIDS.[6,16] For extra consideration that SIDS rate could be higher than it is documented, as many of unexpected death cases were incompletely investigated, also there is limited information about refugee Infants.

B. SIDS investigation barriers

Sudden unexpected death investigation appears to be a major public health problem in ME region. Barriers to SIDS reporting were linked to the regions political systems, culture, religion, education and equipment supplies.[9,13-15] SIDS topic has not been a national health policy priority in ME countries. Thus, the current regions political systems associated with the war also makes it more difficult to investigate SIDS rates, especially among the refugee populations, who have extremely limited information about or access to prenatal, birth, and postnatal care. This is likely to have particular relevance for isolated and poorer communities, where types of housing and a lack of health resources potentially contribute to both a higher incidence and a lower level of reporting of SIDS. Cultural beliefs and religion faiths linked to oppose ME societies from practice the death autopsy. Therefore, many of infant deaths are not completely investigated to indicate the truth SIDS rates. Nevertheless, that CDC (2014) indicated that the most leading cause of unexplained death among infants is SIDS,[1] lending support to the perception that the actual incidence of SIDS is higher than it reported in the literature. Furthermore, there is lack of awareness of updated technology for death investigation in ME; in contrast these societies appear unaware of SIDS topic. Thus, lack of supplies and necessary resources for SIDS investigation make this problem much complicated.

C. SIDS research

Literature review indicated that SIDS is still under covered topic among child health research in ME countries. Although only 15 SIDS related articles focusing on the ME were identified, the cumulative conclusion to be drawn from this review strongly indicates the need for further investigation of SIDS and SUID in the region. Not enough is known about SIDS to suggest appropriate preventive measures; however, most of the SIDS deaths are due to preventable measures.[10] Future research in this area is needed, including investigations of the incidence of SIDS within the unexpected child death mortality category, especially deaths occur during winters, which is linked to SIDS.[17] Moreover, public health and medical personnel should be fully educated about SIDS and its diagnosing measures in order to more accurately identify SIDS cases, but also help educate the population about SIDS. It is also important to use the update technologies and recourses to effectively investigate the deaths with the unknown cause of deaths, and developing socially acceptable methods to effectively investigate infant deaths and improving diagnosis quality for sudden unexpected infant deaths.

Conclusions

The literature provided very limited information on SIDS statistics in the ME. However, the few studies been conducted in the region raised consideration about SIDS incidence and indicated SIDS a significant problem could be a leading cause of infant mortality in the ME. This literature review also identified a strong need for further investigation for causes of infant mortality in ME region. Developing a comprehensive investigation for infant deaths of unknown causes and use update technologies will yield incredible benefits for an infant's health care practice and enhance their survival rates. However, this cannot be achieved without understanding the risks and issues associated with these particular communities, including migrant and refugee ME population. A better understanding of the circumstances and events associated with sleep-related and environmental factors associated with infant deaths may help reduce future deaths.

Conflict of interest

The author declares no conflict of interest in preparing this article.

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