Public Health Nurses: Their Knowledge of Neonatal Abstinence Syndrome

Miley Cyrus

University of Athabasca

Abstract

**Research question:** What level of knowledge do public health nurses’ have about Neonatal Abstinence Syndrome (NAS) and what do they perceive as barriers to providing care?

**Background**: NAS can be defined as the presence of withdrawal behaviors in neonates exposed to dependency producing drugs in utero. The behaviors include central nervous system hypersensitivity, autonomic dysfunction, and gastrointestinal disturbances.

Research has focused on several aspects of NAS including pharmaceutical treatments, practice guidelines, evaluation of diagnostic tools, and nursing interventions. Research has also been completed on nurses’ experience in providing care to these infants, but little research has focused on the long-term needs of these infants or the follow-up care required.

**Aim of this study:** This study aims to explore public health nurses’ level of knowledge of Neonatal Abstinence Syndrome and their perceived barriers to providing follow-up care.

**Methods**: This study will be completed using descriptive quantitative methodology. The data will be collected using a web-based questionnaire located on Survey Monkey. A link to the survey will be provided to participants through an email.

**Sample:** A purposive census sample of Prince Edward Island public health nurses will be invited to complete the web-based questionnaire. Presently there are forty public health nurses employed on Prince Edward Island.

**Data analysis:** The research will use SPSS and descriptive statistics to analyze and describe the data.

**Findings:** It is hoped that the results of the study will ascertain nurses’ knowledge and attitudes about NAS and indicate what interventions are needed through education and training. It is hoped that the research findings will also highlight the necessity for planning ongoing education for nurses providing care for families with NAS.

Public Health Nurses: Their Knowledge of Neonatal Abstinence Syndrome

 Health professionals are faced with increasing numbers of individuals who are drug addicted. According to the United Nations Drug Report (2012), it was estimated that 15.5 million to 36.8 million people were drug dependent. Of those estimated, it is believed that 26.4 to 36 million are addicted to opioids. Within Canada, 2.1% of women of childbearing age (15-44 years) have reported using illicit drugs and 5% of women reported using illicit drugs during pregnancy. These numbers are on the rise. Across Canada the number of babies born with Neonatal Abstinence Syndrome (NAS) increased 27% over a 4 year period, increasing from 1450 to 1850 cases between 2013 and 2017 (Canadian Institute for Health Information, 2018). Women, especially mothers, face stigmatism and often fear when reporting drug use and when seeking help. Unfortunately these statistics are most likely underreported. As nurses care for increasing numbers of women of childbearing years suffering from addictions, nurses are now faced with an increasing number of babies born with NAS.

 The diagnostic development of NAS is representative of an emerging clinical issue and social problem. NAS can be defined as, “the presence of withdrawal behaviors in neonates exposed to dependency producing drugs *in utero*. The behaviors include central nervous system hypersensitivity, autonomic dysfunction, and gastrointestinal disturbances” (Marcellus, 2007, pg. 35). Withdrawal symptoms can occur within the first few days after birth and may last for several weeks and even months. These symptoms include: irritability, high-pitched cry, increased muscle tone, difficulties with feeding and sleeping, and gastrointestinal problems (Marcellus, 2007). Other behaviors seen in babies during withdrawal include skin mottling, sneezing, frequent yawning, and fever. These infants often present with a failure to thrive (Canadian Pediatric Society, 2018; Oei & Lui, 2007).

Although research on the long-term effects of NAS on infants is minimal, there have been studies that identify there are significant impacts on growth including cognitive, neurological and physical development (Kenner & D’Apolito, 1997). Long-term follow-up is needed to provide ongoing care to these infants as well as help to improve the maternal infant bond, improve parenting efficacy, and make appropriate referrals for families in need. Because of their role in the follow-up care of women and babies, public health nurses (PHN’s) are in the perfect role to provide this care.

 The purpose of this study is to explore the level of knowledge of public health nurses of NAS and their perceived barriers to providing care for these families. It is hoped that the results of the study will ascertain nurses’ knowledge and attitudes about NAS and indicate what interventions are needed through education and training. It is hoped that the research findings will also highlight the necessity for planning ongoing education for nurses providing care for families with NAS.

**Literature Review**

 In response to the increasing number of babies born to addicted mothers, the body of research in the area of NAS and neonatal withdrawal has also increased. The origins of this research can be traced back to the 1970’s when the definition and the symptoms of NAS were the focus. Since that time research has begun to concentrate on nursing interventions, outcomes, and effective management early in the diagnosis of NAS.

 NAS research has emphasized potential changes to nursing practice. Abbett and Greenwood (2012) compared ways in which NAS was treated, including medications, dosage, and weaning protocols. From the comparisons they identified a need for further research into how maternal and infant interactions can be encouraged and the need for improved support for nurses caring for infants with NAS (Abbett & Greenwood, 2012). Marcellus (2002) also looked at the nursing practice of caring for addicted babies. The study compared how policy development, facilities, discharge planning, staff education and support varied across Canadian hospitals that provide care to families with addiction. She identified that there is a gap in Canadian research on this topic and due to this, the management and nursing practice is impeded by the lack of evidence (Marcellus, 2002).

 Like Marcellus, researchers Murphy-Oikonen, Montelpare, Bertoldo, Southon, and Persichino (2012) identified that there is a lack of standardized approach in the management of babies with NAS. Their findings demonstrated that clinical practice guidelines effectively decreased symptom severity, resulting in less time required by nursing staff to provide treatment of symptoms, monitoring, and scoring (Murphy-Oikonen et al. 2012).

 Logan, Brown, and Hayes (2013) looked at the long-term pediatric outcomes. They are in the process of completing a longitudinal study on drug exposed and non-drug exposed infants. While the study is ongoing, they acknowledge that the long term effects of infant addiction co-occur with other risk factors including addiction to other substances, socioeconomic status, low levels of education, prenatal care and nutrition. Because of this it is difficult to isolate the risk factors and learn about the impact of methadone in the long term.

 Kenner and D’Apolito in 1997 identified that the sub-acute symptoms of withdrawal from opiates can last from 2-3 weeks to 4-6 months with rare occurrences of symptoms lasting as long as a year. It has also been identified that long term effects of opiate exposure during pregnancy can include a delayed physical growth, neurologic performance, and cognitive development. There can also be a decrease in weight, length, and head circumference (Beauman, 2005).

 The Cochrane Database (as cited in Marcellus, 2002) states that the goal of treatment of NAS should be to provide comfort to the mother and the infant in relieving symptoms, improve feeding and weight gain, prevent seizures, reduce unnecessary hospitalization, improve mother-infant interaction, and reduce the incidence of infant mortality and abnormal development. It can be seen from these findings that care of infants with NAS does not end with discharge, ongoing assessments and interventions are needed long-term.

 Nurses play an important role in caring for addicted babies and their families. Marcellus (2007) identified that nurses are the primary caregivers during the infant’s period of withdrawal, but little research has been completed learning about their knowledge, experiences, and routine practice. These babies and their families require advanced communication skills, need a special environment, advanced skills in assessment, feeding, and be able to console an infant with extreme irritability and prolonged crying (Fraser, Barnes, Biggs, & Kain, 2007; Marcellus, 2007). Working in partnership with families during times of stress, while not making them feel judged is essential (Cleveland & Gill, 2013, Fraser et al., 2006, Marcellus, 2007). A study done by Maguire, Webb, Passmore, & Cline (2012) found that RN’s working within a neonatal ICU demonstrated limited knowledge about substance exposure, addictions, and its effects. The nurses held attitudes that were more punitive and negative toward women who used drugs in the perinatal period.

 While several studies have focused on the acute care setting, few have looked at how nursing care can be provided following hospital discharge. Public health nurses were identified as being in a unique position to build relationships and were identified the most frequently as part of the follow up support for the infant and family (Nelson, 2013; Marcellus, 2002). Very little literature could be found about the potential impact of public health nursing care or their experiences. It could be assumed that public health nurses may face many of the same challenges but also different barriers with little education or support to date.

 Knowledge is essential in providing care to infants and families with NAS. “The level of knowledge, skill, patience, and commitment required in providing excellent nursing care to this group of infants should not be underestimated” (Marcellus, 2007, pg. 38). Health care providers require education regarding current recommendations in respect to NAS, nurses generally tend to underestimate the knowledge needed to care for an infant with NAS, and should be provided specialist training (Murphy-Oikonen, Montelpare, Bertoldo, Southon, & Persichino, 2010; McQueen, Murphy-Oikonen, Gerlach, & Montelpare, 2011).

 In summary, the literature about NAS has mainly focused with the diagnosis of NAS and its acute care treatment. Screening, scoring, and management have been the focus of research, but almost entirely within the scope of acute care. Little research has been found focusing on the long-term follow-up care of these infants and families within their communities. With increased education nurses could impact the mother’s relationship with her infant, improve breastfeeding outcomes, and promote the health of the infant as well as the entire family (Beauman, 2005; McQueen, et.al 2011; Murphy-Oikonen, et.al 2010).

**Research Concepts**

This research study focuses on the concepts of NAS, public health nursing, and knowledge, with the concept of NAS being defined previously in this paper.

**Public Health Nurses**

The Canadian Public Health Association defines a public health nurse as having a baccalaureate degree in nursing and is a member in good standing of a professional regulatory body for registered nurses. The public health nurse combines knowledge from public health science, primary health care, nursing science, and the social sciences. They promote, protect, and preserve the health of populations (Canadian Public Health Association, 2010). In Prince Edward Island, public health nurses work within the community and provide nursing care to new mothers and babies following discharge from the hospital. They also provide ongoing growth and development screening for all children from birth to school entry.

**Nursing Knowledge**

 Nursing knowledge is complex, dynamic, and evolving. It underpins what nurses do and is embedded in their practice. It defines nursing as a profession and is necessary for competent, safe practice. Nursing began by drawing its knowledge from other professions and sources and now builds upon that through nursing research. It ranges from practical concepts to abstract theories (Hall, 2005).

The concept of knowledge for this study will be further defined using the definition found in the nursing theory of Informed Caring. It is empirical, ethical, and aesthetic knowledge of the range of responses humans have to actual and potential health problems (Swanson, 1993).

**Theoretical Framework**

Kristen Swanson’s theory, Nursing as Informed Caring for the Well-Being of Others, will be used to support this study. The importance of nurses’ knowledge in providing care to infants and families has been well documented and the goal of this study is to explore public health nurses level of knowledge of NAS. According to this theory, the therapeutic practices of nurses are grounded in knowledge, related sciences, humanities, as well as personal insight and experiences and that the goal of nurse caring is to enhance the well-being of its recipients. It is the combination of knowledge, information, and the goal of practice (Swanson, 1993).

 The theory contains five caring processes. Informed caring begins with maintaining belief. This is described as a fundamental belief in persons and their capacity to make it through events and transitions to face a future with meaning. It is from this stance that nurses define what matters and where to provide care (Swanson, 1993).

 The second process, knowing, involves avoiding assumptions, thoroughly assessing all aspects of the client’s condition, and engaging the client in an informed caring interaction. Informed caring is enhanced by empirical, ethical, and aesthetic knowledge. Nurse’s clarity on their own perspectives and contributions identifies the need for nursing scholarship and promotes a deeper knowledge to serve the health needs of the community.

 Being with, is the third process of informed caring. This conveys to the client that they and their experiences matter to the nurse. Swanson provides examples of public health nurses sharing clinic phone numbers, emails, assurance of immediate access, and home visits as ways of informed caring. The fourth process, doing for, can be described as providing comfort, anticipating needs, providing skilled and competent nursing care; protecting clients from undo harm and providing dignity. This can also be achieved through communication skills as well as providing programs or systems that provide safe areas to promote healing. The final process is enabling. This is includes informing and educating, providing support so that clients can have their own experience, assisting clients to focus on important issues, aid clients in generating alternatives, guiding, and offering feedback (Swanson, 1993).

 Swanson’s theory of Informed Caring can be used as a guide for public health nurses to care for their clients and emphasizes the importance of knowledge in meeting the needs of their communities. By exploring the level of knowledge of public health nurses, their educational needs can be better met and they will be able to provide informed caring.

**Methods**

**Participants**

The population of interest in this study is public health nurses who provide follow up care to infants and families with NAS. A purposive, census sample will be used, which means the participants were chosen for their particular knowledge and skill set and includes the entire population (Bhattacherjee, 2012). The questionnaire will be emailed to all public health nurses on Prince Edward Island, including offices in Souris, Montague, Charlottetown, Kensington, Summerside, O’Leary, and Tignish. Inclusion criteria are as follows: participants must have an RN designation, and have a permanent part-time or full time position as a public health nurse. To gain access to the sample, initial meetings will be held with the nurse managers in each office to review the study, gain consent to approach their public health nursing staff as well as permission to obtain their email addresses.

 There are presently forty public health nurses working on Prince Edward Island. All forty nurses will be included in the sample and it is hoped that there will be a high response rate.

 **Setting**. Due to the fact that this is an online survey, it can be completed at any time and in any location the participant chooses as long as there is computer access.

**Procedures**

 **Study Design.** This research will be a descriptive exploratory study using a quantitative research methodology. A univariate design will be used to describe the variable of knowledge. The data will be collected using a computer assisted self-administered questionnaire. It is a web-based tool that was chosen because it can be set up to be completed within a chosen time frame, provides an effective method for participants to privately and confidentially disclose personal and sensitive information, eliminates interviewer bias and has minimal cost (Bhattacherjee, 2012).

 **Measures.** The variables in this study are public health nurses, knowledge, and barriers to providing follow up care. The Canadian Public Health Association defines a public health nurse as having a baccalaureate degree in nursing and is a member in good standing of a professional regulatory body for registered nurses. The PHN combines knowledge from public health science, primary health care, nursing science, and the social sciences. They promote, protect, and preserve the health of populations (Canadian Public Health Association, 2010). Knowledge will be defined using the definition found in the nursing theory of Informed Caring. It is empirical, ethical, and aesthetic knowledge of the range of responses humans have to actual and potential health problems (Swanson, 1993). Finally, barriers are defined as something immaterial that impedes or separates (Merriam-Webster 2014).

The questionnaire is a modified version of the “Fetal Alcohol Syndrome Survey for Health Professionals”. The questionnaire has been modified to now focus on NAS as opposed to Fetal Alcohol Syndrome (FAS) and no longer contains questions regarding the diagnosis of illness. The questionnaire is made up of primarily closed ended questions but is complimented with three open ended questions. A combination of both types offsets the strengths and weaknesses of each type (Bhattacherjee, 2012). Knowledge is assessed by thirteen main questions in the form of forced choice questions, multiple-choice questions and 5-point Likert scales. The questionnaire will be available through an emailed hyperlink to Survey Monkey. (See Appendix A)

 **Reliability and validity**. The questionnaire’s quality will be assessed using reliability and validity. As a measure of reliability, the internal consistency will be measured by calculating Cronbach’s alpha, which should be greater than 0.85 (Polit & Beck, 2012). Validity will be evaluated by finding content validity. To increase content validity of the modified questionnaire, an expert in questionnaire construction, a substantive content area specialist, and someone to detect technical problems will examine the questionnaire prior to distribution. The questionnaire will be then emailed to five public health nurses for further feedback. Feedback will be taken into consideration and adjustments to the survey will be made to reflect their feedback. The modified questionnaire will then be distributed to the entire sample.

 Public Health Nurses managers will be briefed by the principle investigator about the purpose and procedures of the study. Pending the agreement of the managers/clinical leaders, the principal investigator will request to speak briefly to nurses during their monthly staff meetings. The investigator will provide a brief review of the study and give nurses an opportunity to ask questions, as well as leave a letter of information and consent. After consent is obtained, participants will be sent an email containing a brief summary of the study and a web link to the questionnaire located on Survey Monkey. Following a two-week period, an email reminder will be sent to all who signed a consent form allowing an additional week to respond.

**Ethical Considerations**

This research proposal will be submitted to the University of Athabasca’s Research Ethics Board and the PEI Research Ethics Board. Participants will be provided information about the study, will be given the opportunity to ask questions, and will be provided an information letter to keep. A written consent form will be attached to the information letter. Participants can store signed consent forms in a sealed, unmarked envelope to be picked up by the principle investigator or mailed in an addressed and prepaid envelope. Consent forms will be stored separate from any data and in a locked office of the principle investigator.

 Anonymity is the most secure means of protecting confidentiality and is achieved when the researcher cannot link participants to their data (Bhattacherjee, 2012). The online survey design chosen for this study is especially conducive to this. When beginning the questionnaire process on Survey Monkey, the IP addresses and email tracking addresses will be disabled to maintain anonymity. Each Public Health Nurses will be assigned a unique numeric identifier to protect their identity and maintain confidentiality. Any data documentation will be kept in a secure location and shredded following a seven year time period. Survey responses will be stored in a secure, password-protected database, which will be wiped clean following a seven year time period.

 There is minimal risk to the participant in this study and it is the hope that public health nurses on PEI will benefit from future education initiatives as the outcome of this research. All potential participants will be informed that participation in the study is voluntary and refusing to participate will not influence their work relationships.

**Data Analysis**

 Data will be uploaded to a secure database. It will be coded and analyzed using a Statistical Package for the Social Sciences (SPSS). Descriptive statistics will be used to summarize and describe the sample. These descriptive stats will include: mode, median, mean, range, and standard deviation.

**Dissemination of Results**

 After completion of the study, the researcher will attend staff meetings of the Public Health Nursing offices to share research results and provide follow-up. A presentation or poster of the research may be shared and the findings will be submitted to nursing journals with the hope of publication.

Conclusion

 The findings of this research will provide data that will enable us to better understand the knowledge and attitudes of Public Health Nurses of babies born with NAS as well as the barriers the nurses see in providing care for these families. Increasing our understanding will help to provide a basis for future education for these nurses and improve the follow-up care families with NAS receive.

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Appendix A

**Neonatal Abstinence Syndrome Survey**

**For Public Health Nurses**

**(modified FAS Survey for Health Professionals)**

**Demographic Data**

**Gender:**

Male\_\_\_\_\_\_\_\_\_\_\_ Female\_\_\_\_\_\_\_\_\_\_

**Age:**

20-29 years\_\_\_\_\_\_\_\_ 30-39 years\_\_\_\_\_\_\_

 40-49 years\_\_\_\_\_\_\_ 50+ years\_\_\_\_\_\_\_\_

**Highest level of nursing education:**

 Diploma\_\_\_\_\_\_\_

 Bachelor degree\_\_\_\_\_\_\_

 Masters\_\_\_\_\_\_\_

 PhD\_\_\_\_\_\_\_

How many years have you been practicing as a Public Health Nurse? \_\_\_\_\_\_\_

**Neonatal Abstinence Syndrome**

**1. When did you first hear of NAS? (please select one answer only)**

\_\_\_\_\_\_\_\_\_\_ In the last one to two years \_\_\_\_\_\_\_\_ 3 to 4 years ago

\_\_\_\_\_\_\_\_\_ more than four years ago \_\_\_\_\_\_\_\_ never

**2. From what sources have you gained knowledge about NAS? (please circle all that apply)**

media Nursing school

patients

 other (please specify)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

colleagues

medical journals, book

**3. Neonatal Abstinence Syndrome is caused by prenatal exposure to the following: (please circle all that apply)**

**a) Methadone**

**b) Opioid**

**c) Marijuana**

**d) a & c**

**e) all of the above**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | strongly agree | agree | uncertain/ not applicable | disagree | strongly disagree |
| 1. | NAS is an identifiable syndrome. |   |
| 2. | Opioid’s effect on fetal development remains unclear. |
| 3. | NAS occurs in all strata of society. |
| 4. | NAS occurs at similar rates among all cultures and ethnic groups. |
| 5. | The substance abuse patterns of pregnant women are substantially influenced by the substance abuse patterns of their partners. |
| 6. | Discussing the use of opioids during pregnancy will frighten or anger clients. |
| 7. | Discussing the use of opioids during pregnancy will deter women from continuing and/or seeking treatment. |
| 8. | Making a diagnosis of NAS does not change anything for the child. |
| 9. | Prenatal drug exposure is a significant risk factor for permanent developmental delays. |
|  |  |

**4. Please indicate your opinion on the following statements:**

**5. Do you consider the following types of problems to be outcomes of prenatal drug exposure?**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Yes** | **No** | **Don’t know** |
| 1. Infantile withdrawal symptoms |  |  |  |
| 2. Delayed development |  |  |  |
| 3. Birth defects |  |  |  |
| 4. Mental disorders |  |  |  |
| 5. Learning disabilities |  |  |  |
| 6. Lowered IQ |  |  |  |
| 7. Behavioural problems |  |  |  |
| 8. Low birth weight |  |  |  |
| 9. Small for gestational age |  |  |  |
| 10. Premature birth |  |  |  |
| 11. Above average birth weight |  |  |  |
| 12. Seizures |  |  |  |
| 13. Vision problems |  |  |  |
| 14. Structural brain damage |  |  |  |
| 15. Spontaneous abortion |  |  |  |

**6. How prepared do you feel to care for the following groups of clients in the area of drug abuse or dependency?**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Very Prepared** | **Prepared** | **Unprepared** | **Very Unprepared** | **Do Not Care For** |
| **Pregnant women** |  |  |  |  |  |
| **Birth mothers** |  |  |  |  |  |
| **Foster parents** |  |  |  |  |  |
| **Affected individuals** |  |  |  |  |  |

**7. How prepared do you feel to access resources for the following groups of clients in the area of substance abuse or dependency?**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Very Prepared** | **Prepared** | **Unprepared** | **Very Unprepared** | **Do Not Care For** |
| **Pregnant women** |  |  |  |  |  |
| **Birth mothers** |  |  |  |  |  |
| **Foster parents** |  |  |  |  |  |
| **Affected individuals** |  |  |  |  |  |

**8. Please rate how helpful the following kinds of materials or supports would be to you in your clinical practice.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Very****Helpful** | **Somewhat****Helpful** | **Not very****Helpful** | **Not at all****Helpful** |
| **Literature on the impact of opioid use during pregnancy** |  |  |  |  |
| **Materials or training on NAS** |  |  |  |  |
| **Training on addictions** |  |  |  |  |
| **A registry of specialists available for consultation on NAS** |  |  |  |  |
| **Referral resources for women of childbearing age with drug abuse problems** |  |  |  |  |
| **Clinical practice guidelines for treatment and follow-up of NAS** |  |  |  |  |
| **Internet resources** |  |  |  |  |
| **Other (please specify below)** |  |  |  |  |

**9. How routinely do you obtain a detailed history about the following from women following childbirth?**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Frequently** | **Sometimes** | **Rarely** | **Never** |
| **Sexual abuse** |  |  |  |  |
| **Emotional abuse** |  |  |  |  |
| **Drug use** |  |  |  |  |
| **Personal history of addictions** |  |  |  |  |
| **Family history of drug misuse** |  |  |  |  |

**10. How routinely do you provide information about prenatal drug exposure to pregnant women?**

**Frequently\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Sometimes\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Rarely\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Never\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**11. What do you feel are barriers to providing follow-up care to families with NAS?**

**12.Have you provided follow up care to infants with NAS? If yes, what specific nursing care did you provide?**

**13. What resources/education could best help you provide care for infants with NAS and their families?**

 **(Public Health Agency of Canada, Knowledge and Attitudes of Health Professionals About FAS, 2005.** [**www.phac-aspc.gc.ca**](http://www.phac-aspc.gc.ca)