International Journal of
Nursing and Midwifery
Volume 6 Number 8 December 2014
ISSN 2141-2456

Academic Journals

ABOUT IJNM

The **International Journal of Nursing and Midwifery (IJNM)** is published monthly (one volume per year) by Academic Journals.

International Journal of Nursing and Midwifery (IJNM) is an open access journal that provides rapid publication (monthly) of articles in all areas of the subject such as family practice, women's health care, emergency nursing, psychiatry, geriatrics, pediatrics etc.
The Journal welcomes the submission of manuscripts that meet the general criteria of significance and scientific excellence. Papers will be published shortly after acceptance. All articles published in IJNM are peer-reviewed.

Submission of Manuscript

Submit manuscripts as e-mail attachment to the Editorial Office at: ijnm@academicjournals.org, ijnm@acadjourn.org. A manuscript number will be mailed to the corresponding author shortly after submission.

For all other correspondence that cannot be sent by e-mail, please contact the editorial office (at ijnm@academicjournals.org, ijnm@acadjourn.org).

The International Journal of Nursing and Midwifery will only accept manuscripts submitted as e-mail attachments.

Please read the **Instructions for Authors** before submitting your manuscript. The manuscript files should be given the last name of the first author.

Editors

Editorial Board

International Journal of Nursing and Midwifery

Table of Content: Volume 6 Number 8 December 2014

ARTICLES

Research Articles

academicJournals

Vol. 6(8), pp. 97-107, December 2014
DOI: 10.5897/IJNM2014. 0147
Article Number: 4E8126349332
ISSN 2141-2456

http://www.academicjournals.org/IJNM

International Journal of Nursing and Midwifery

Full Length Research Paper

Crying newborns: The colic and reflux situation in New Zealand as depicted by online questionnaire

S. Hodge[1] and P. Murphy[2*]

[1]Faculty of Agriculture and Life Sciences, Lincoln University, Canterbury, New Zealand.
[2]Baby Cues, PO Box 35081, Shirley, Christchurch 8640, Canterbury, New Zealand.

Received 16 November, 2014; Accepted 9 December, 2014

Infantile colic is prevalent among newborns and typically defined in terms of repeated bouts of inconsolable crying occurring several days of the week. There appears no universal cause for colic and none of the multifarious behavioural, dietary and pharmaceutical treatments are of benefit in all cases. This study collected data from 154 New Zealand parents with colicky and reflux infants by online questionnaire. Male and female infants were represented approximately equally in the sample, and respondents consisted of parents who breast fed and bottle fed, and considered themselves demand or routine baby feeders. Feeding frequency ranged from 5 to 14 sessions per day, and there was a weak, but significant, relationship between frequency of crying bouts and daily feeds. Almost 90% of newborns had started colicky behaviours by one month of age and although colic is often thought to settle naturally by 3 to 4 months, 24% of children had not resolved by 11 months. Behavioural interventions (example, burping; cranial massage; baby massage), natural products (example, herbal teas) and over the counter remedies (example, gripe water; colic powders) stopped colic completely in very few infants (< 3%), although most treatments improved the situation for some children. Prescription drugs (example, ranitidine; omeprazole) were perceived to be more efficient, with 23% of parents indicating that colicky behaviour had ceased, and 82% indicating these treatments were helpful. One note of concern is that over half of the parents that had given their child prescription medicines had increased the dosage over time. Respondents indicated that antenatal/pregnancy classes did not provide adequate education in topics such as winding babies, colic, reflux, and irregular sleeping patterns in newborns. The results of the survey reinforce a need for pre-natal education about the prevalence of these excessive crying behaviours in infants and which interventions could be attempted immediately.

Key words: Ante-natal education, colic, crying, gastro-oesophageal reflux, feeding, herbal remedies, wind.

INTRODUCTION

Various reports indicate that around 10 to 25% of newborns suffer from infantile colic at some stage, with 90% of cases occurring in the first month of life (Long, 2001; Roberts et al., 2004). Colicky behaviours appear to peak at around one month to six weeks of age, and then decline in frequency and intensity,usually resolving naturally by 3 to 4 months of age (Garrison and Christakis, 2000; Lucassen et al., 2001; Totterdell, 2011;

*Corresponding author. E-mail: philippa@naturalwinding.com

Sanghavi, 2005; Perry et al., 2011).

The crying of newborns is an important component of the development of the communication 'dialogue' between child and carer (Acebo and Thoman, 1995; Cecchini et al., 2007). Infantile colic involves crying behaviour that is persistent and excessive, generally being described as involving bouts of unexplained, intense and inconsolable crying in otherwise healthy infants (Wessell et al., 1954; Reijneveld et al., 2001).

The crying bouts usually occur multiple times a day, on several (or most) days of the week, and are often associated with other behaviours, for example irritability, reflux, indications of pain, and difficultly sleeping (Keller et al., 1990). In addition to the suffering experienced by the newborn, colic often results in a suite of negative emotions in the parents (and other family members), such as stress, despair and helplessness, in addition to the weariness which results from sleep deprivation (Kirkland, 1985; Sanghavi, 2005; Kurth et al., 2011).

The aetiology of infantile colic is often unclear, with suggested causal factors including a lack of development of the digestive system, gut inflammation, build-up of gas and over feeding (Woolridge and Fisher, 1988; Totterdell, 2001; Canivet et al., 2008; Iacovou et al., 2012). The situation can be further complicated by infants which exhibit the intensive crying associated with colic also showing behaviours associated with gastro-oesophageal reflux (GOR), such as spilling and regurgitating of milk, with either condition possibly causing the manifestation of the other (Van and Storms, 2010; Hassall, 2012; Hudson et al., 2012). Thus newborn diet is often an initial point of focus, with both adverse reactions to breast milk and to dairy-based formulae being associated with colic and reflux in some cases (Clifford et al., 2002; Leung and Lemay, 2004; Critch, 2011; Iacovou et al., 2012). Parents with colicky infants are faced with a wide range of treatments, from dietary modifications and behavioural interventions, and from natural or herbal remedies to potent prescription drugs (Lucassen et al., 1998; Dobson et al., 2012; Hall et al., 2012; Cowie, 2013). Studies into the treatment of excessive infant crying are numerous, but few treatments appear to work in all cases, and conclusions drawn from empirical investigations are often confounded by the studies being performed during the period when the infants were likely to improve naturally (Roberts et al., 2004; Sanghavi, 2005).

Many behavioural interventions, such as the use of a pacifier, swaddling, carrying, and decreased stimuli, can be adopted immediately but appear to only sometimes alleviate symptoms (Huhtala et al., 2000; Garrison and Christakis, 2000; Hyodynmaa and Tammela, 2005; Van et al., 2006; Dobson et al., 2012). Dietary modifications are some of the most commonly prescribed (and undertaken) interventions, as they are low risk and can be offered to mothers immediately. The replacement of dairy-based formulae with hydrolysed infant formula has been shown to be effective in some, but not all, cases. Similarly, modifying the maternal diet to in order to avoid introducing allergens or specific 'elicitors' into breast milk, has also been demonstrated to reduce colicky behaviour (Garrison and Christakis, 2000; Critch, 2011; Iacovou et al., 2012).

Over the counter remedies, such as simethicone, various 'gripe water' tonics, and targeted preparations such as 'colic drops' and mixtures, are popular as they are easily acquired and obtained without need of a medical consultation (Lucassen et al., 1998; Roberts et al., 2004; Perry et al., 2011.) Various complementary and alternative medicines (CAM), for example chiropractic treatment (Alcantara et al., 2011; Miller et al., 2012), acupuncture (Cakmak, 2011), body and cranial massage (Huhtala et al., 2000; Arikan et al., 2008), probiotics (Sung et al., 2014) and herbal teas (Wiezman et al., 1993; Savino et al., 2005; Arikan et al., 2008), have also been reported to reduce colic, although rarely with any consistency (Lucassen et al., 1998; Roberts et al., 2004; Perry et al., 2011).

The necessity of using prescription medicines to treat colic and GOR in newborns is debated, with their use being more of a response to the anxiety and mental state of the parents as opposed to the prognosis of the newborn (Hassall, 2012; Hudson et al., 2012). Various reports indicate that increasing numbers of newborns are being prescribed strong antacid drugs (example, Prilosec), histamine antagonists (example, ranitidine) and proton pump inhibitors (PPIs; example, omeprazole) for symptoms associated with GOR and colic (Sanghavi, 2005; Van and Storms, 2010; Hassall, 2012). In 2013 omeprazole was the third most commonly dispensed medicine in New Zealand. Between 2006 and 2010 the number of prescriptions dispensed for newborns increased from 4650 to 8231. The largest occurred in the age zero to three months (111%) and four to six months (80%) cohorts. This increase despite a lack of evidence to support the prescribing of omeprazole to infants for symptoms such as irritability and regurgitation associated with uncomplicated reflux (BPAC 2011; 2014). Hassall (2012) suggested that this increase in the use of PPIs for colic and reflux may be related to an increase in the use of the term *acid reflux*, even though spilling of milk in infantile reflux is primarily due to over-filling of the stomach, and there is actually little evidence that acid plays a role in most cases. Indeed, a number of studies indicate the use of such drugs results in a wide range of adverse side effects, such as higher incidence of gastroenteritis, pneumonia and respiratory tract infections (Hassall, 2012; Hudson et al., 2012).

Apart from the work of Hudson et al. (2012), there appears to have been little previous research into colic, reflux and excessive crying in New Zealand. Kirkland (1982; 1985) summarized the findings of a postal survey of 450 New Zealand parents with excessively crying offspring, a study that was organized by New Zealand Woman's Weekly magazine in the early 1980s (J. Kirkland

pers. comm.). Kirkland described a situation where 75% of babies began excessive crying within three weeks of age and 25% were still crying at 9 months of age. Around 30% of mothers thought that the cause of the crying was likely to be related to wind, and 10% due to oversupply of milk (Kirkland, 1985).

The aim of the current investigation was to obtain more recent information on the experiences of New Zealand parents whose newborns showed colic, reflux or excessive crying by using an online questionnaire. Data were obtained on feeding behaviour, the extent of colicky behaviour, and the use and perceived benefit of a range of behavioural interventions, natural and 'over-the-counter' remedies and prescribed medicines.

METHODOLOGY

Survey

The questionnaire was active from 1st August to 1st December, 2012 and was accessible at the website www.naturalwinding.co.nz. The survey was advertised throughout New Zealand on radio stations, in newspapers and in parenting magazines (Example, Kiwi Parent, Little Treasures, Good, Kiwi Families and Family Times). Fliers advertising the survey were distributed to play centres and parenting groups. The survey was open to any parent whose child was displaying excessive crying and/or colicky behaviour patterns (with a list of these behaviours on the fore said website so parents could ascertain applicability) or diagnosed by a health professional (midwife, GP, paediatrician etc.). No parents were contacted directly to promote the survey; participation was purely voluntary and there was no remuneration for taking part. There were no exclusion criteria based on age of child, age of parent or time elapsed since colicky behaviour had occurred (potentially affecting accuracy of information recall). Each parent provided information based on just one child.

As a minimal-risk observational study, this investigation was not required to undergo a formal Health and Disability Ethics Committee review in New Zealand. However, the study was performed following the principles of the World Medical Association "Declaration of Helsinki", regarding informed consent, anonymity, beneficence and voluntary participation, and that withdrawal (in the sense that there was no obligation to answer all questions) could occur at any time. The survey asked a range of questions organized in broad subsections: background information; breast/bottle feeding; antenatal education/training in parenting; the occurrence and frequency of various colicky behaviours (example, frequency and duration of crying bouts; spilling of milk); use of behavioural interventions; use of over the counter (OTC) remedies; use of CAM and herbal or natural remedies; use of prescription medicines). The respondents were asked whether the interventions they had used had completely stopped the colicky behaviour and/or to rate the intervention using a score between ten (excellent) to zero (totally ineffective) on how effective they perceived that treatment to be. The score was applied to each group of remedies (natural, OTC, prescription): therefore each product was given an exclusive score only when that parent indicated they had used only that product and a combined score when the product was part of a wider range of remedies in the same category.

Statistical analysis

Data were collated and analysed using Microsoft Excel 2010 and Minitab v16. Associations between categorical variables were examined using χ^2 tests. The effectiveness of 'cranial massage' and 'baby massage' were compared utilizing only those scores from respondents who had attempted both methods using a paired t-test. To compare major categories of chemical remedies (prescription; OTC and herbal) a 'within subject' analysis of variance was performed to compare scores between treatment groups whilst taking into account the differences in scoring schemes between individual parents. The relationship between the numbers of daily feeding sessions and bouts of crying was assessed using Pearson's correlation coefficient.

RESULTS

Participants

There were 154 respondents to the survey, ranging in age from 21 to 64 years. The number of children in each 'family' ranged from 1 to 5, with a mean of 1.8. In total, the parents had produced (or cared for) 315 children between them, of which 245 (78%) were described as having exhibited colic or reflux. Of the 154 children that were the actual subjects for the survey, 70 were female and 84 were male. With regard to antenatal instruction, 125 respondents (81%) had attended antenatal classes, but only 31 of these (25%) indicated that these classes had been particularly useful. Parents identified a number of areas that they thought more information was needed such as: sleep patterns in babies (10%), winding babies (10%) and settling (8%). The need for more information on colic/reflux was explicitly indicated by 17% of parents.

Feeding

The growth of newborns appeared fairly typical, with 89% having a weekly weight gain of between 110g and 250gm (although this information was poorly reported by the parents). More mothers considered themselves demand feeders (77%) than routine feeders (23%). Breast feeding was used by 92% of respondents, bottle feeding breast milk by 31% and the use of baby formula by 41% (23% of respondents utilized all three methods). Spilling of milk occurred with 82% of children, with 70% of mothers considering this normal behaviour. Of the 88 respondents who stated they switched feeding methods (that is, from breast to bottle or vice versa) the baby was thought to be more settled in 32% of cases.

The frequency of feeds ranged from 5 to 14 per day, with a mean of 8.7 times per day (Figure 1a). There was a weak, but statistically significant relationship between the number of breast feeds and number of crying bouts per day (r_P = 0.224, n = 121, P = 0.014). The average duration of breast feeds was approximately 30 min: 67% of mothers fed within the range of 20 to 60 min (Figure 1b). Total daily breast feeding times for each parent were estimated by multiplying feeding frequency by the average duration. For three mothers this total feeding was less than 60 min, which may indicate that some other feeding methods were also utilised (or represent an error in data reporting). The total feeding time data were skewed

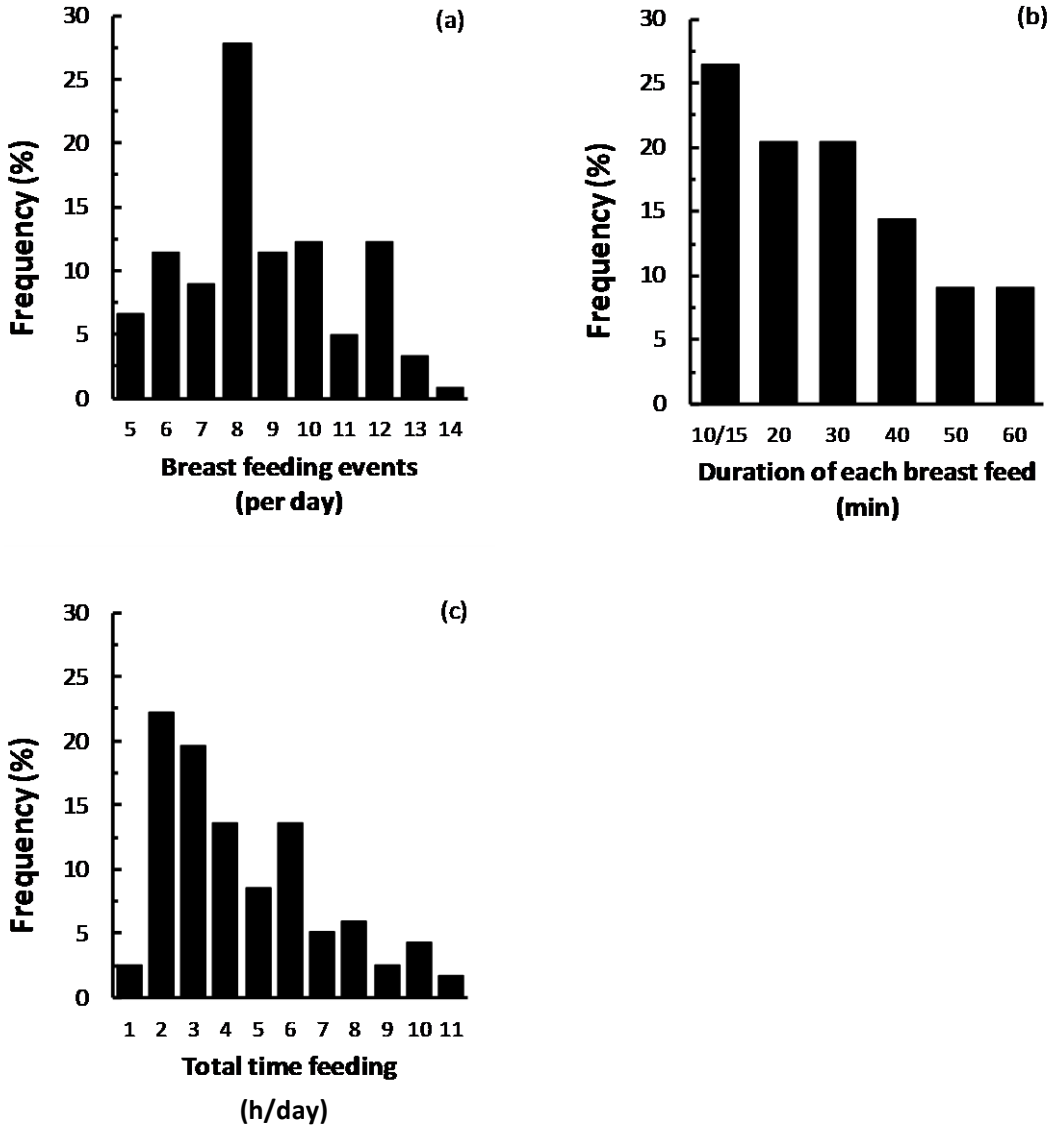

Figure 1. Frequency (%) charts illustrating patterns in (*a*) breast feeding events per day, (b) duration of each breast feeding session and (c) total breast feeding time per day. (Labels on *x*-axis represent upper limit of interval).

skewed, with 36% of parents feeding for 6 h or more per day, with some reportedly feeding up to 11 h (Figure 1c).

A number of issues were identified in the patterns of breastfeeding, such as 66% of parents allowing the baby to feed from both breasts at each feed and only 24% feeding their newborn at around the same time each day on the same breast. By feeding at different times each day and from a different breast, supply and demand can be compromised since it takes consistent demand to establish good milk supply. With a number of parents feeding like this it creates the possibility that some of the newborns may have actually been crying from hunger (Woolridge and Fisher, 1988; Murphy 2015). However, we believe this would be a very small proportion of the newborns given that 70% of mothers increased feeding spells in the evening hours, with 31% of these offering another two to three feeds and 58% considering themselves as feeding 'almost continuously' during the evening.

Colicky behaviour

The parents indicated that 29% of the children began showing behaviours associated with colic within a week after birth, increasing to 89% in the first month and 100% by three months of age. Colicky behaviour had ceased in only 55% of the children by six months and 18% of children

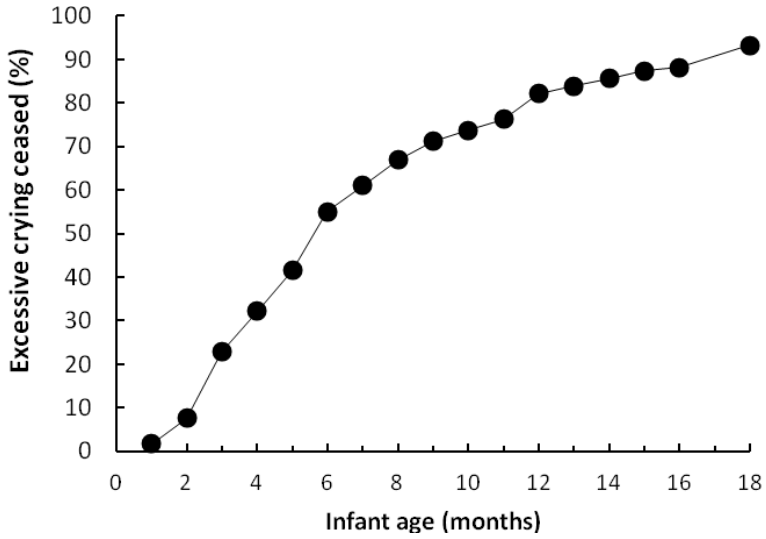

Figure 2. Cumulative percentage of infants that ceased colicky and excessive crying behaviours with age (months) based on 154 New Zealand cases.

were still exhibiting excessive crying or reflux behaviour at 12 months of age (Figure 2). The frequency of crying bouts ranged from one to ten episodes per day, with a mean of 4.8 per day. 37.6% of newborns had three or fewer crying bouts per day, whereas 19.5% had eight or more. The average duration of crying bouts was estimated to be 80 min. In terms of the regularity of crying bouts, 83% of cases experienced crying bouts every day. When sleep finally occurred, only 9% of parents thought this was due to the baby being comfortable and tired. In contrast, 60% of parents thought their babies finally went to sleep due to exhaustion. By examining the combination of the number of crying bouts per day, and the average duration of crying bouts, a maximum of 95/154 newborns (62%) would meet the criteria for colic suggested by Wessel et al. (1954) of 'at least three hours crying, for at least three days a week'. Only 66% of the babies were actually diagnosed with reflux/colic by a medical practitioner, and, interestingly, there was no statistical association between meeting Wessel's criteria and being 'officially' diagnosed with colic/reflux ($\chi^2 = 0.88$ for 1 d.f., $P > 0.30$), suggesting that the diagnoses are inconsistent with Wessel criteria, or that some infants with severe crying are not being presented to medical professionals. Although fatigue (24% of respondents) and general discomfort (30%) were thought to be a common cause of crying bouts, the majority of parents (121/154) specifically indicated that symptoms associated with wind were one of the major causes of suffering (example, a build-up of wind; inability to bring up wind). Parents also believed that reflux or stomach acid (35%) was causing pain and crying. Other commonly suggested causes were: problems with the digestive system (19%); over supply of breast milk (17%); hunger from not feeding properly (14%) and allergies (11%).

Behavioural curative methods

The most common basic behavioural methods used to try and calm a crying child were: pacing with the baby (78% respondents); bouncing the baby (75%); swaddling the baby (70%); and carrying the baby in a sling (68%). Approximately 30% of respondents attempted calming by giving the baby (boiled) water to drink, and 10% had offered the babies a sugar solution. Almost all (98%) of parents deliberately 'burped' their babies after feeding, with an average of 2.4 burps per session, but only a small proportion (≈ 3%) indicated that this stopped the babies discomfort. Approximately two thirds of parents attempted to calm the baby by allowing the baby to suck a finger (62%) or use a pacifier (66%). Only 18% of parents believed they had been taught the correct use of a pacifier and some parents indicated that pacifiers could/would not be used as: the child rejected it (6.5%); the parents did not agree with their use (7.1%). 85% of parents said they would use a pacifier if there was scientific evidence indicating their merit. The same proportion (59%) of parents had attempted cranial massage as had attempted baby massage as a calming technique. The parents gave the cranial massage an average 'effect score' of 4.1/10, which was slightly higher than the score obtained for baby massage of 3.3/10 (paired t-test, $t = 2.33$, $P = 0.024$, $n = 56$).

Natural remedies

Half of the respondents had tried at least one natural remedy

remedy to ease colic symptoms, although only 2.7% of users indicated that these natural remedies made the excessive crying stop completely (Tables 1 and 4). These remedies were administered on average around 3 to 4 times day, but the average effect scores tended to be low (Table 2). The most commonly used product was 'Colic Calm' (a form of gripe water containing a mixture of herbs), followed by 'Rhugar' (a natural remedy made form rhubarb and ginger), then fennel and chamomile teas (Table 1). Chamomile tea was perceived to bring the greatest relief; with parents giving an average effect score of 6/10. Although most of their average effect scores were low, many of these products were scored highly (≥ 8) by some parents.

Over the counter (OTC) remedies

Overall, 82% of respondents had used OTC remedies, the most commonly used being Infacol (47%) which contains simethicone, followed by gripe water (40%) and Weleda Baby Colic Powder (21%) (Table 2). On average, these remedies were administered between 3 to 5 times a day, and obtained low average effect scores between 3/10 and 4/10, although the maximum and minimum scores for each product tended to be extreme (Table 3). Only 2.4% of users indicated these remedies had solved the problems associated with colic (Table 4).

Prescription drugs

The most commonly used prescription drugs were omeprazole, ranitidine and infant gaviscon (Table 3). The most common behavioural changes listed were: a reduction in crying, a reduction in spilling during feeding, babies appeared calmer and slept more. As a consequence, the effect scores for prescription drugs were relatively high compared to OTC and natural remedies, omeprazole having a mean score of 6.8/10 and ranitidine 7.1/10. Of the parents that had used these drugs, 82% indicated that they had proved 'helpful', with 23% indicating that their use had stopped colicky behaviour completely. Of concern was that over half (57%) of the parents said they had increased the dosage of prescription drugs over time. Although it was some-times difficult to extract this information from the given answers, for omeprazole, indications were that the average increase in dosage (relative to the initial dose) was 2.4 times, and for ranitidine 2.7 times. For both of these drugs, the maximum increase reported was 4 times the initial dose.

Statistical comparison of effects scores obtained by different product categories

The most commonly used remedies were the over the counter products (81.8% of respondents), with the least common being the natural remedies (49.4%) (Table 4); 43 respondents had tried at least one of each category of remedy. The proportion of respondents that indicated that pharmaceutical remedies had solved the problems associated with colic was nearly 10 times higher for the prescription drugs (23.2%) than for the natural (2.7%) and OTC remedies (2.4%) (Table 4; $\chi^2 = 32.7$, d.f. = 2, $P < 0.001$). Similarly the average effect score for prescription drugs (6.4/10) was significantly higher than the effect scores for the OTC (3.6/10) and natural remedies (3.8/10) (Table 4; $F_{2,84} = 17.0$; $P < 0.001$).

DISCUSSION

The information on colicky and excessive crying behaviours provided by the respondents depicts a pattern fairly typical of that reported elsewhere, and there appears not to have been major changes from the situation described by Kirkland (1982) for New Zealand parents over 30 years ago. In the current study, colic started in just under 90% of newborns by one month of age with most ceasing by 12 months. Most parents indicated they thought newborn distress was related to wind (build-up of wind; inability to bring up wind) or reflux and stomach acid. Other commonly suggested causes were related to feeding or digestion, such as overfeeding on breast milk, hunger from improper feeding, or feeding allergies. From the share of cases, there appeared no obvious relationships between the occurrence of colic and gender of the newborns (Crowcroft and Strachan, 1997).

Similar to many other previous reports, given the prevalence of both bottle and breast fed infants, and routine and demand feeders, there appeared to be no association between general feeding strategy and the occurrence of excessive crying behaviour (Crowcroft and Strachan, 1997; Roberts et al., 2004; Critch, 2011). However, there was a positive relationship between the number of breast feeding sessions and bouts of crying per day: the newborns that had the most crying bouts had a slight tendency to be those that were fed most frequently. Many parents indicated total feeding times amounting to several hours per day with 70% of parents increasing feeding spells in the evenings. When the capacity of the newborn stomach is taken into consideration, along with the transit times for food to move through their digestive system, it appears that some of these newborns are being over fed (Murphy, 2015). Overfeeding is known to produce symptoms of colic and reflux (Woolridge and Fisher, 1988; Hassall, 2012), although in this instance we cannot ascertain whether feeding was the cause of the crying or a parental response to try and calm the baby. However, as the majority (77%) of parents were demand feeders, likely responding to crying as a cue for hunger, it may be speculated that a form of positive feedback loop may be occurring, involving overfeeding

Table 1. The use and perceived effectiveness (score from 10) of herbal and natural remedies for infantile colic in 154 New Zealand cases.

Remedy	Used by respondents (%)	Mean exclusive use score	Mean combined use score	Min. - Max. score	Mean usage per day
Colic Calm	16.9	3.1	3.8	1-8	3.7
Rhugar	11.7	3.5	3.7	1-7	4.2
Fennel tea	7.1	5.0	3.8	1-10	3.4
Chamomile tea	5.8	6.0	4.6	1-8	3.6
Mint tea	1.3	-	4.5	3-6	4.0
New Era	1.3	-	4.0	3-5	5.0
Ginger	0.6	3.0	3.0	3-3	6.0
Other	17.5	4.1	4.1	1-8	4.8

Table 2. The use and perceived effectiveness (score from 10) of over the counter remedies for infantile colic in 154 New Zealand cases.

Remedy	Used by respondents (%)	Mean exclusive use score	Mean combined use score	Min. - Max. score	Mean usage per day
Infacol drops	47.4	4.2	3.6	1-10	4.7
Gripe water	39.6	2.9	3.3	1-9	4.2
Weleda Baby Colic Powder	21.4	4.9	3.7	1-7	4.7
Colic drops	7.1	8.0	3.5	2-8	4.9
Wellington Hospital Colic Mix	5.8	4.0	3.9	1-8	5.2
Other	12.3	2.9	2.6	1-6	3.8

Table 3. The use and perceived effectiveness (score from 10) of prescription medicines for infantile colic in 154 New Zealand cases.

Medicine	Used by respondents (%)	Mean exclusive use score	Mean combined use score	Min. - Max. score	Mean usage per day
Omeprazole	39.6	6.8	6.7	1-10	2.2
Ranitidine	23.4	7.1	6.9	1-10	2.3
Gaviscon	11.0	3.2	4.5	1-10	4.0
Esomoprazole	0.6	-	-	-	-
Other	3.9	7.0	6.9	3-9	1.7

Table 4. Summary of overall product usage (% of parents) and perceived effectiveness (score from 10) for infantile colic/reflux as indicated by 154 New Zealand parents.

Number of products used	Proportion of respondents (%)			
	Prescription	OTC	Natural	All products
0	37.7	18.2	50.6	5.2
1	47.4	46.8	37.7	17.5
2	13.6	24.7	10.4	27.9
3	1.3	6.5	1.3	24.7
4	-	1.9	-	8.4
5	-	1.3	-	8.4
6	-	0.6	-	5.8
7	-	-	-	0.6
8	-	-	-	0.0
9	-	-	-	1.3
Colic ceased (% of users)	23.2	2.4	2.7	-
Mean effect score (*x*/10)	6.4	3.6	3.8	-

overfeeding → crying → comfort feeding → crying, and so on. Cry responsiveness is a function of both infant behaviour and the 'dynamics of the mother-infant interactional system' (Acebo and Thoman, 1995): colicky behaviour could in some ways be seen to represent a malfunction of this parent-baby communication process.

Most of the respondents indicated levels of crying, spilling, sleeplessness and so on, in line with general definitions of colic. Statistically, there was a lack of association between medical diagnoses and the infants meeting Wessel criteria. Totterdell (2001) described a similar situation where many parents who noted prolonged crying in their infants did not seek (or feel they needed) professional help. However, these findings appear to differ with a number of other reports which suggest that colic or intensive crying is one of the most common reasons behind parents seeking medical help (Crowcroft and Strachan, 1997). In the UK, Sung et al. (2014) suggested that 'infant distress' is one of the 'most common presenting problems to primary, secondary, and tertiary healthcare sectors, costing the UK healthcare system millions of pounds annually'. Zwart et al. (2007) described an extreme example of this phenomenon where of 104 infants admitted to hospital with 'severe crying', a medical cause of the crying was identified in no cases, and almost all infants showed a rapid transition to 'normal crying' during the period of hospital admission. Thus, it appears that readiness to report colicky behaviour can be variable, and at least be partially dependent upon levels of stress, and feelings of helplessness, in the parents, and their inability to cope with inconsolable crying. Crowcroft and Strachan (1997) listed many social factors (such as the age of mother, socioeconomic factors, educational level) that might indirectly be related to parents' coping abilities and hence their inclination to seek advice or help with infant crying.

In this study parents indicated that the prescription drugs omeprazole and ranitidine were perceived to have worked well in alleviating crying; effect scores were high and over a quarter of parents indicated that colicky behaviour had ceased. Omeprazole is a proton pump inhibitor that reduces stomach acid in infants, whereas ranitidine is a histamine antagonist that inhibits stomach acid production. Thus, theoretically, these drugs alleviate colic by supressing stomach acid. However, as Hudson et al. (2012) indicated, stomach acid is found to be the causal agent of excessive crying in only a small number of cases, and our results appear to contrast with some other empirical studies where there were no differences found between placebo and omeprazole treated groups of crying infants over time (Moore et al., 2003; Omari et al., 2007).

The perceived effectiveness of these prescription drugs may have been related to the finding that over half of the parents increased the dosage over time, sometimes up to four times the initial dose. Where doses are increased - and when body weight is taken into consideration - infants could be given quantities of these drugs equivalent or in excess of those recommended for adults. When even the validity of using these drugs for use with newborns is still debated the risk of side effects such as gastroenteritis and pneumonia would also likely be increased.

These findings add further impetus for the use (and potential misuse) of these drugs for treating ailments in newborns to be reviewed (Hassall, 2012; Hudson et al., 2012; BPAC, 2014).

Many reviews of colic treatments (Lucassen et al., 1998; Garrison and Christakis, 2000; Roberts et al., 2004; Cowie, 2013) indicate that herbal remedies may be a viable option, although many of these suggestions are largely based on the results of one or two empirical studies

(usually those of Weizman et al., 1993; Arikan et al., 2008; Perry et al., 2011).

In our study, the average effect scores for the natural remedies were low and very few parents indicated colicky behaviour disappeared altogether. However, high effect scores were given by some parents, suggesting these treatments can work in some cases. The organic nature and 'naturalness' of herbal remedies appeals to many parents (Garrison and Christakis, 2000) and their use is often advocated by midwives (Harding and Foureur, 2009). Chamomile and fennel appeared to be the most successful herbal remedies, agreeing with some previous findings (Savino et al., 2005; Arikan, 2008).

Most of the minor behavioural interventions (example, walking, swaddling, bouncing, front packs) were thought to be ineffective by respondents, contradicting some previous findings, but not others (Huhtala et al., 2000; Van et al., 2006). However, we feel that many of these interventions are so commonly undertaken by parents that they are likely to be part of normal parenting/nursing practice and would have been used early on to ease infant crying: if they had been successful it is unlikely the infant would have developed excessive crying behaviour in the first place.

Typically, the more involved behavioural interventions, such as cranial and infant massage, appeared to work well in some instances but not all. Many parents indicated that crying behaviours were associated with the build-up of wind and the inability to bring up wind. However, the levels of winding babies after feeding appeared to be low, most parents (90%) indicating that fewer than five burps were produced after each feed. With a lack of air being released, a build-up of trapped digestive gasses and air in the newborns stomach forms. Increasing the amount of air released by actively inducing something in the region of 10 to 15 burps after each feed, has proved effective in reducing colic and reflux in some instances (Murphy 2015).

LIMITATION

The use of questionnaires (along with oral interviews, diaries of behaviours and diet, etc.) is a common method of obtaining data on colic, interventions and long term outcomes (Crowcroft and Strachan, 1997; Clifford et al., 2002; Canivet et al., 2008; Talachian et al., 2008; Yalcin et al., 2010). The voluntary aspect to taking part in the survey could lead to an obvious sampling bias in terms of several social factors, such as exposure to advertising, willingness to respond, degree of motivation, free time, access to the internet, and so on. Also, the final sample size of 154 respondents is not substantial. Demographic data were not collected so that participants did not feel that the study might be designed to identify, or single out, any potentially vulnerable social group where crying babies appeared particularly prevalent. However, a number of socio-economic factors have been suggested as influencing the occurrence of (and likelihood of seeking help for) colic, from educational standard and employment type, to being with a long term partner (Crowcroft and Strachanm, 1997; Clifford et al., 2002; Canivet et al., 2004; Yalcin et al., 2010). Additional information on the parent's lifestyle (example, diet; alcohol intake; smoking) may have been informative and future research into the prevalence of colic in terms of New Zealand's various social groupings may be valuable in this respect.

The classification of the natural, OTC and prescription remedies was vague in some cases. For example, gripe water tonics can contain a variety of herbal extracts (such as dill and fennel) along with sucrose and bicarbonate of soda, and could be considered a form of herbal remedy. Similarly, Weleda colic treatments contain chamomile and fennel, as well as other herbs. Parents considered Gaviscon (and Infant Gaviscon) both as an OTC treatment and as a prescription medicine (most likely when suggested by a health professional), whereas ranitidine is now available over the counter in many places.

Conclusion

The results of our survey are in general agreement with those of many other reports on colic: there appears to be no overall common link between the occurrence of colic, gender and type of feeding strategy, and no universal cure. However, the data obtained on the quantity of feeding, at least for the breast feeders, may indicate a link between excessive feeding and the occurrence of colic/reflux. The results highlight that in New Zealand at least the prescribing of medicines such as omeprazole for colicky newborns is still widespread, and that many parents are using higher than recommended doses in attempts to stop excessive crying behaviours. Somewhat unfortunately, infants with colic appear to consist of a very heterogeneous group, with different sub sets responding differently to various interventions (Garrison and Christakis, 2000). These interventions could be attempted simultaneously to try and rapidly identify which treatment, or which combination of treatments, induces relief (Eriksson, 2008). Any care or management strategy should involve both infant and parental needs, with parents reassured to lessen feelings of inadequacy or unwarranted anxiety, and show understanding of the common link between persistent infant crying and a maternal state of tiredness and fatigue (Cakmak, 2011; Kurth et al., 2011). The care process could begin during prenatal education if parents were specifically informed of how to avoid and manage excessive crying, reflux and colicky behaviour, and that in most cases this does not signify a more serious ailment in the child (Keller et al., 1990; von Kries et al., 2006).

ACKNOWLEDGEMENTS

The authors wish to thank all of the respondents in this

survey and the free advertisers for the exposure. Funding for part of this investigation was provided by anonymous donors.

Conflicts of interest

The authors declare that they have no conflicts of interest.

REFERENCES

Acebo C, Thoman EB (1995). Role of infant crying in the early mother-infant dialogue. Physiol Behav. 57(3):541-547.

Alcantara J, Alcantara JD, Alacantara J (2011). The chiropractic care of infants with colic: systematic review of the literature. Explore 7:168-174.

Arikan D, Alp H, Gozum S, Orbak Z, Cifci E (2008). Effectiveness of massage, sucrose solution, herbal tea or hydrolysed formula in the treatment of infantile colic. J. Clin. Nurs. 17(13):1754-1761.

BPAC (2011). Irritable reflux, infants and GORD. Best Pract. J. 40:30-37.

BPAC (2014). Proton pump inhibitors: when is enough, enough? Best Pract. J. 61:8-15.

Cakmak YO (2011). Infantile colic: exploring the potential role of maternal acupuncture. Acupunct. Med. 29(4):295-297.

Canivet CA, Ostergren PO, Jakobsson IL, Dejin-Karlsson E, Hagander BM (2008). Infantile colic, maternal smoking and infant feeding at 5 weeks of age. Scand. J. Public Health 36:284-291.

Cecchini M, Lai C, Langher V (2007) Communication and crying in newborns. Infant Behav. Dev. 30(4):655-665.

Clifford TJ, Campbell MK, Speechley KN, Gorodzinsky F (2002). Infant colic - Empirical evidence of the absence of an association with source of early infant nutrition. Arch. Pediatr. Adolesc. Med. 156(11):1123-1128.

Critch JN (2011). Infantile colic: is there a role for dietary interventions? Paediatr. Child Health 16(1):47-49.

Cowie J (2013). Managing infant colic: a literature review. Prim. Health Care 23:16-20.

Crowcroft NS, Strachan DP (1997). The social origins of infantile colic: questionnaire study covering 76747 infants. BMJ 314(7090):1325–1328.

Dobson D, Lucassen PL, Miller JJ, Vlieger AM, Prescott P, Lewith G (2012). Manipulative therapies for infantile colic. Cochrane Database Syst. Rev. 12:CD004796.

Eriksson M (2008). Effectiveness of massage, sucrose solution, herbal tea or hydrolysed formula in the treatment of infantile colic. J. Clin. Nurs. 17(13):1754–1761.

Garrison MM, Christakis DA (2000). A systematic review of treatments for infant colic. Pediatr. 106(Suppl 1):184-190.

Hall B, Chesters J, Robinson A (2012). Infantile colic: a systematic review of medical and conventional therapies. J. Paediatr. Child Health 48(2):128-137.

Harding D, Foureur M (2009). New Zealand and Canadian midwives' use of complementary and alternative medicine. N. Z. Coll. Midwives J. 40:7-12.

Hassall E (2012). Over-prescription of acid-suppressing medications in infants: how it came about, why it's wrong, and what to do about it. J. Pediatr. 160(2):193-198.

Hudson B, Alderton A, Doocey C, Nicholson D, Toop L, Day AS (2012). Crying and spilling - time to stop the over medicalisation of normal infant behaviour. N. Z. Med. J. 125(1367):119-26.

Huhtala V, Lehtonen L, Heinonen R, Korvenranta H (2000). Infant massage compared with crib vibrator in the treatment of colicky infants. Pediatr. 105(6):e84-e84.

Hyodynmaa E, Tammela O (2005). Cradling in the prevention of excessive crying and colic symptoms in infants. Infant. Ment. Health J. 26(3):217-230.

Iacovou M, Ralston RA, Muir J, Walker KZ, Truby H (2012). Dietary management of infantile colic: a systematic review. Matern. Child Health J. 16(6):1319-1331.

Keller H, Ubozak C, Risau J (1990). The concept of colic and infant crying in paediatrics: an exploratory study. Early Child Dev. Care 65(1):71-76.

Kirkland J (1982).For Cry's Sake: toward understanding and coping with baby crying. CERT Publishing, Palmerston North. P 128.

Kirkland J (1985). Crying and Babies. Billing & Sons Ltd., Worcester. P 210.

Kurth E, Kennedy HP, Spichiger E, Stutz EZ (2011). Crying babies, tired mothers: what do we know? A systematic review. Midwifery 27(2):187-194.

Leung AK, Lemay JF (2004). Infantile colic: a review. J. R. Soc. Promot. Health 124(4):162-166.

Long T (2001). Excessive infantile crying: a review of the literature. J. Child Health Care 5(3):111-116.

Lucassen PL, Assendelft WJ, van Eijk JT, Gubbels JW, Douwes AC, van Geldrop WJ (2001), Systematic review of the occurrence of infantile colic in the community. Arch. Dis. Child. *84*(5):398-403.

Lucassen PL, Assendelft WJ, Gubbels JW, van Eijk JT, van Geldrop WJ, Knuistingh Neven A (1998). Effectiveness of treatments for infantile colic: systematic review. BMJ 316(7144):1563-1568.

Miller JE, Newell D, Bolton JE (2012). Efficacy of chiropractic manual therapy on infant colic: a pragmatic single-blind, randomized controlled trial. J Manipulative Physiol. Ther. 35(8):600-607.

Moore DJ, Tao BS-K, Lines DR, Hirte C, Heddle ML, Davidson G (2003). Double-blind placebo-controlled trial of omeprazole in irritable infants with gastroesophageal reflux. J. Pediatr. 143(2):219-223.

Murphy PA (2015). BabyCues – Prevent and Remedy Colic, Reflux, Lactose and Dairy Overload Naturally – Nature's Logical Answers. Philippa Murphy Media, Christchurch.

Omari T, Haslam R, Lundborg P, Davidson G (2007). Effect of omeprazole on acid gastroesophageal reflux and gastric acidity in preterm infants with pathological acid reflux. J. Pediatr. Gastroenterol. Nutr. 44(1):41-44.

Perry R, Hunt K, Ernst E (2011). Nutritional supplements and other complementary medicines for infantile colic: a systematic review. Pediatr. 127:720–33.

Reijneveld SA, Brugman E, Hirasing RA (2001). Excessive infant crying: the impact of varying definitions. Pediatr. 108(4):893-897.

Roberts DM, Ostapchuk M, O'Brien G (2004). Infantile colic. Amer. Fam. Physician 70:735-740.

Sanghavi D (2005). Bleary parents crave colic cure. Boston Globe. Mar 29.www.boston.com/yourlife/health/children/articles/2005/03/29/bleary_parents_crave_colic_cure

Savino F, Cresi F, Castagno E, Silvestro L, Oggero R (2005). A randomized double-blind placebo-controlled trial of a standardized extract of *Matricariae recutita*, *Foeniculum vulgare* and *Melissa officinalis* (ColiMil) in the treatment of breastfed colicky infants. Phytother. Res. 19(4):335-340.

Sung V, Hiscock H, Tang MLK, Mensah FK, Nation ML, Satzke C, Heine RG, Stock A, Barr RG, Wake M (2014). Treating infant colic with the probiotic *Lactobacillus reuteri*: double blind, placebo controlled randomised trial. BMJ. 348:g2107.

Talachian E, Bidari A, Rezaie MH (2008). Incidence and risk factors for infantile colic in Iranian infants. World J. Gastroenterol. 14(29):4662.

Totterdell P (2001). Links between time of day, sleep and unhappy mood in early infancy: an intensive case study. Brit. J. Dev. Psychol. 19(3):433-451.

van Howe RS, Storms MR (2010). Gastroesophageal reflux symptoms in infants in a rural population: longitudinal data over the first six months. Pediatr. 10(1):7

van Sleuwen BE, L'Hoir MP, Engelberts AC, Busschers WB, Westers P, Blom MA, Schulpen TWJ, Kuis W (2006). Comparison of behavior modification with and without swaddling as interventions for excessive crying. J. Pediatr. 149(4):512-517.

von Kries R, Kalies H, Papousek M (2006). Excessive crying beyond 3 months may herald other features of multiple regulatory problems. Arch. Pediatr. Adolesc. Med. 160(5):508-511.

Weizman Z, Alkrinawai S, Goldfarb D, Bitran C (1993). Efficacy of herbal tea preparation in infantile colic. J. Pediatr. 122(4):650-652.

Wessel MA, Cobb JC, Jackson EB, Harris GS, Detwiler AC (1954). Paroxysmal fussing in infancy, sometimes called "colic." Pediatrics 14(5):421-433.

Woolridge MW, Fisher C (1988). Colic, "overfeeding", and symptoms of lactose malabsorption in the breast-fed baby: a possible artifact of feed management? Lancet 332(8607):382-384.

Yalcin SS, Orun E, Mutlu B, Madendag Y, SInici I, Dursun A, Ozkara HA, Ustunyurt Z, Kutluk S, Yurdakok K (2010). Why are they having infant colic? A nested case-control study. Pediatr. Perinatal Epidemiol. 24(6):584-596.

Zwart P, Vellema-Goud MGA, Brand PLP (2007). Characteristics of infants admitted to hospital for persistent colic, and comparison with healthy infants. Acta Paediatr. 96(3):401-405.

academicJournals

Vol. 6(8), pp. 108-116, December 2014
DOI: 10.5897/IJNM2014. 0140
Article Number: B23C45B49333
ISSN 2141-2456

http://www.academicjournals.org/IJNM

International Journal of Nursing and Midwifery

Full Length Research Paper

Perception and willingness to participate in midwives service scheme amongst nursing and midwifery students in Southwestern Nigeria

David Ayobami Adewole[1], Ayodeji Matthew Adebayo[2] and Taiwo Akinyode Obembe[3]*

[1]Department of Community Medicine, Bowen University, Iwo, Ibadan, Nigeria.
[2]Department of Community Medicine, Faculty of Clinical Sciences, College of Medicine, University of Ibadan, Ibadan, Nigeria.
[3]Department of Health Policy and Management, Faculty of Public Health, College of Medicine, University of Ibadan, Ibadan, Nigeria.

Received 24 September, 2014; Accepted 9 December, 2014

The Midwives Service Scheme (MSS) was implemented to reverse the poor trends in maternal mortality in Nigeria over the past decade. However, little is known about the acceptance of the scheme amongst nursing and midwifery students who are key to ensuring success of the program. The study assessed the awareness, knowledge, perception and willingness to participate in the Midwives Service Scheme in all nursing and midwifery schools in Oyo State, Nigeria. A cross sectional study of 361 final year nursing and midwifery students in Oyo State, Nigeria was conducted via total sampling technique. All consenting students were recruited to participate. Semi-structured self-administered questionnaires were employed to collect relevant information. Data was analyzed with descriptive statistics and association between respondents' characteristics tested using Chi-square at 5% level of significance. Mean age of respondents was 24±4.3 years, 92.8% were female, 87.0% single and 83.4% Christians. Most preferred post basic nursing and midwifery careers reported were university degree nursing (43.4%) and psychiatry nursing (60.8%) respectively. Only 33.8% of the student nurses and midwives were aware of MSS among whom less than half (48.4%) correctly identified the objective of the scheme. Few (24.7%) reported a willingness to participate in the scheme. Awareness of the existence of the scheme was significantly higher amongst the midwives compared to the nurses (X^2=118.0; p<0.001) and in older participants compared to the younger ones (X^2=11.3; p<0.001). Higher proportion of student midwives (X^2=99.5; p<0.001) and participants ≥25 years (X^2=14.18; p<0.001) were significantly more likely to participate in the scheme compared to their respective counterparts. Low level of awareness and willingness to participate in the scheme amongst graduating students in Southwestern Nigeria emphasizes the need for scaled up awareness campaigns to boost acceptance among these groups who are vital stakeholders in the effective implementation and sustenance of the scheme.

Key words: Midwives Service Scheme, nurses, midwives, maternal mortality.

INTRODUCTION

For many decades now, maternal mortality has continued to serve as a very major index in assessing the success of any healthcare system, which is evidenced by its inclusion in the Millennium Development Goals (MDGs)

(UNFPA, 2014c). Sadly, with less than two years to the 2015 target set by the United Nations to achieve MDGs, reduction of maternal mortality ratio (MMR) by three quarters between 1990 to 2015 (MDG-5) in Nigeria is still very nebulous and far from its set target. About 500,000 women die every year in the world due to complications related to pregnancy or childbirth with about half of them residing in Sub-Saharan Africa (Alvarez et al., 2009). Reported maternal and child health outcomes in Nigeria are amongst the worst in the world, with Nigeria second only to India in the number of maternal deaths, majority of which are preventable (Ashir et al., 2013). The World Bank statistics indicate that at least 144 women die each day from pregnancy-related complications in Nigeria placing the country among one of the worst in the world (Archibong and Agan, 2010).

At the national level, maternal mortality ratios (MMRs) are estimated at 630 deaths per 100,000 live births (LBs) but vary from as low as 370 deaths per 100,000 LBs in the southern states to over 1,000 deaths per 100,000 LBs in the northern states (Ashir et al., 2013). Variations in MMR are not only particular to regions in Nigeria but also noticed to be significantly linked with urban-rural variations: – 351/100,000 in the urban as compared to 828/100,000 in the rural parts of the country (Archibong and Agan, 2010) or with booking in prenatal care where it was found that maternal death was about 30 times higher in un-booked compared to the booked patients (Abe and Omo-Aghoja, 2008). Maternal mortality, though an important measure of women's health and indicative of the performance of health care systems, monitoring progress towards the goal has proved to be problematic because maternal mortality is difficult to measure, especially in developing countries with weak health information and vital registration systems (AbouZahr and Wardlaw, 2001; UNFPA 2014)**.** Attention to maternal health was demonstrated in 2000 when 147 heads of state and government and 189 nations signed the Millennium Declaration, in which the proportion of births assisted by trained birth attendants became an important indicator to measure the progress of improving maternal health (Ayede, 2012). Over a decade later, several causes have been implicated for the poor progress in reducing maternal mortality in Nigeria broadly resulting from a wide variety of indirect and direct causes. Medical causes include hemorrhage (34%), infection (10%), hypertensive disorders (9%) and obstructed labour (4%) (Alvarez et al., 2009) while social causes that have been implicated include delayed referral and poverty (Agan et al., 2010). With regards to the timing of maternal death, between 11 and 17% of maternal deaths take place during the childbirth itself and between 50 and 71% occur in the post-partum period.

External factors that have provided laudable explanations for severity of maternal health conditions in sub-Saharan Africa include weak political and financial commitment, deteriorating institutional infrastructure, rapid population growth rates, pervasive poverty, and gender inequalities (Chiwuzie and Okolocha 2001); inability to ensure the right mix of Human Resources for Health (HRH) at all three levels of the health system; local, state and federal (WHO, 2011). Furthermore, skilled birth attendants are either inadequate in number or are not available at all in majority of the rural areas (Koblinksy et al., 2006; FMoH, 2010) as a majority of pregnant women in labour in the rural areas are left unattended to by skilled birth attendants (World Bank, 2013; Ayede, 2012). This alone, is a major predisposing factor responsible for the high mortality ratio in Nigeria especially in the underserved rural populations (WHO 2013). Of the many strategies to address this, the MSS was established in 2009 (Abimbola et al., 2012; NPHCDA, 2009).

MIDWIVES SERVICE SCHEME (MSS)

Midwives service scheme is a national effort instituted by the Federal Government of Nigeria to address the sub-optimal care plaguing maternal care and care of the newborn in Nigeria. The Scheme is a tripartite arrangement between the Local, the State and the Federal governments of Nigeria. These three levels of government statutorily provide the financial support among others to the Scheme while the National Primary Health Care Development Agency (NPHCDA), a parastatal of the Federal Ministry of Health (FMoH), is the implementing body (Abimbola et al., 2012). The goal is to provide an emergency response to human resources for health gaps and to ensure an increase in the coverage of skilled birth attendance to reduce maternal, newborn and child mortality (WHO, 2011). The scheme engages the services of newly graduated, retired and the unemployed midwives by posting them to primary health care facilities in the rural areas for a period of one year that is renewable subject to satisfactory performance (NPHCDA, 2009; FMoH, 2010). “Essentially the midwives attend to healthcare services such as the antenatal, labour, postnatal and infant welfare services among others. More difficult cases especially those requiring emergency obstetric or gynecologic care are referred to designated secondary health facility referral centers. To enhance the quality of the services that they provide, there is a quarterly continuing medical education (CME) on life saving skills (LSS) as well as on the integrate dmanage ment of childhood illnesses (IMCI) for these midwives” (NPHCDA, 2009).

*Corresponding author. E-mail: tobems@yahoo.com.

"To date, 2,488 midwives have been deployed to 652 rural health facilities. This is close to the target of 2,500, which was set in 2009. The scheme has also been accompanied by measures to improve service uptake at the health facilities, which includes community mobilIzation amongst other measures. Funding of the scheme is a tripartite arrangement of the federal, state and the local governments. The federal level contributes 50% of funding, while states contribute 33% and local governments 13%" (WHO, 2011). Despite this structure, the scheme has been dogged by many challenges among which are retention, availability and training of midwives. Most of the newly graduated midwives are either very young or single or are newly married. Inadequate social amenities especially in the hard-to-reach rural areas are other factors responsible for attrition among this crop of health workers in the scheme (Abimbola et al., 2012) Sustaining this programme in the face of inadequate and unwilling workforce is a concern, bearing in mind that the success of the MSS will go a long way in reducing the high level of the prevailing maternal, new born and child mortality rates in Nigeria. The objective of this study is to assess the awareness, perception and willingness of final year nursing and midwifery students in Oyo State, Nigeria to participate in the Midwifery Service Scheme.

METHODOLOGY

Study setting

In this study, a cross-sectional survey was carried out between July and September, 2012 in Oyo State, Nigeria. Oyo state is located in the Southwest geopolitical zone of Nigeria and consists of 33 Local Government Areas. The State covers a total of 27,249 square kilometers of land mass (ranked 14th by size) and bounded in the south by Ogun State, in the north by Kwara State, in the west it is partly bounded by Ogun State and partly by the Republic of Benin, and in the East by Osun State. The State is homogeneous with a population of about 4.5million, predominantly occupied by Yoruba people. The people of Oyo State may be divided into five zones, which are: Ibadan, Ibarapa, Oyo, Oke-Ogun and Ogbomosho groupings (Oyo, 2014). Our study spanned across 3 major cities in Oyo State namely Ibadan, Ogbomosho and Saki (located in Oke-Ogun zone) home to all the nursing and midwifery schools in the State.

Study population, sample size and selection

The study population consisted of all the final year students of the schools of nursing and the schools of midwifery from both the government (public) and the faith-based (private) institutions in Oyo State. There were four (4) schools of nursing in Oyo State (2 government schools and 2 private schools). The schools of midwifery, 6 in number (2 public, 4 private) includes the Baptist Hospital, Ogbomoso (1 nursing school, 1 midwifery school), Baptist Hospital Saki (1 nursing school, 1 midwifery school), Muslim School of midwifery Saki, University College Hospital Ibadan (1 nursing school, 1 midwifery school), Oyo State Schools of Nursing and midwifery, Catholic Hospital Oluyoro Ibadan (1 school of midwifery). The total number of final year nursing and midwifery students in all study. All consenting final/graduating year students from these schools were enrolled in the study. A total number of 361 candidates opted to participate in the study with a response rate of 96.8%. A pre-tested self-administered questionnaire was used to collect the data that was developed based on the study objectives and review of relevant literature. In order to ensure full capture of as many participants as possible, visits were repeated at least twice to interview participants who were unavoidably absent during the first visit. Ethical approval to conduct the study was obtained from the Bowen University Teaching Hospital Research Ethics Committee according to the Declaration of Helsinki Ethical Principles for Medical Research involving human subjects. Data collection was completed over a period of eight weeks.

Statistical analysis

Statistical analysis was performed using Statistical Package for the Social Sciences (SPSS) version 15. Frequency tables and proportions were generated and used to interpret quantitative variables respectively. Chi-square test was used for bivariate analysis to test associations between selected socio-demographic characteristics, awareness and willingness to participate in the scheme.

RESULTS

Socio-demographic characteristics

The student nurse to student midwife ratio was 2:1 and mean age of the respondents was 24 ± 4.3 with 67.9% below 25years of age. Most were female (92.8%), single (87%), predominantly of Yoruba tribe (85.6%), Christians (83.4%) and from nursing school, Ibadan (32.1%). The highest qualification for entry into basic nursing training was senior secondary school certificate (65.1%) while basic nursing certificate was entry requirement for midwifery training (39.9%) (Table 1)

Awareness, knowledge and willingness to participate in MSS

Only 124 (33.8%) respondents of the student nurses and midwives were aware of Midwifery Service Scheme (MSS). Amongst those that were aware (N=124), over half (55.6%) of the respondents knew that MSS was launched in 2009 but less than half (48.4%) correctly identified the objective of the programme as reducing maternal and child morbidity and mortality in Nigeria while another 15.3% reported that the main objective for the creation of the program was simply to deploy midwives to rural areas of the country. More than one-fifth (22.6%) did not have the slightest idea of why it was launched. Almost a quarter of the total, 89 (24.7%) reported a willingness to participate in the scheme (Table 2).

Perception towards MSS

About their perception of the scheme, 118 (32.7%) were of the opinion that MSS is targeted at reducing maternal and infant mortality in Nigeria, 19.9% felt every qualified

Table 1. Socio-demographic characteristics of participants.

Socio-demographic Characteristics (N=361)	Frequency	Percentage
Sex		
Male	26	7.2
Female	335	92.8
Age		
≤24	245	67.9
≥25	116	32.1
Mean Age	24± 4.3	
Marital status		
Single	314	87.0
Married	42	11.6
Other (widowed, co-habiting)	5	1.4
Religion		
Christianity	301	83.4
Islam	52	14.4
Traditional worshipper	8	2.2
Tribe		
Yoruba	309	85.6
Others	52	14.4
Highest qualification		
Secondary school certificate	235	65.1
Basic nursing	126	39.9
Course		
Nursing	235	65.1
Midwifery	126	34.9
School distribution by location		
Nursing Ogbomoso	78	21.6
Midwifery Ogbomoso	24	6.6
Nursing Saki	41	11.4
Midwifery Saki	32	8.9
Nursing Ibadan	116	32.1
Midwifery Ibadan	70	19.4

nurse should participate in the scheme; only 22.7% believed that it is both a well implemented and sustainable scheme in Nigeria (Table 3).

Preferred career paths and factors influencing choices

Majority 283 (78.4%) claimed to have willingly chosen nursing as a profession. Influence from family members was a cogent reason for studying nursing in a few of the participants (10%) while others chose nursing because of failure to a secure university admission (7.5%) (Table 4). About career choice after basic nursing, a substantial proportion of the respondents expressed a desire to pursue university education (43.4%) followed by training in psychiatry nursing (23.4%). Only 6.8% of the student nurses had plans for midwifery training after basic nursing training. Reported reasons for not choosing or preferring midwifery as a career after basic nursing training and midwifery training include lack of interest or passion for midwifery (22.8%), preference for Bachelor of

Table 2. Awareness, knowledge and willingness to participate in MSS.

Variable	Frequency (N)	Percentage (%)
Awareness of MSS (N=361)		
Yes	124	33.8
No	217	60.4
Don't know	20	5.8
Knowledge on year of launch (N=124)		
Correct (2009)	69	55.6
Incorrect (others)	55	44.4
Knowledge on objective of MSS (N=124)		
Reduce maternal and child morbidity and mortality	60	48.4
To deploy midwives to rural areas	19	15.3
Support or ensure that pregnant women have access to focused ante-natal care	1	0.8
Others	16	12.9
No idea	28	22.6
Willingness to participate in MSS (N=361)		
Yes	89	24.7
No	272	75.3

Table 3. Perception of MSS among nursing students.

Perception of MSS amongst nursing students	Agree	Don't know	Disagree
	N (%)	N (%)	N (%)
Help reduce maternal and infant mortality	118 (32.7)	242 (67.0)	1 (0.3)
It is a scheme that every qualified nurse should participate in	72 (19.9)	251 (69.5)	38 (10.6)
It is a well implemented scheme	82 (22.7	259 (71.8)	20 (5.5)
It is a sustainable scheme	82 (22.7)	265 (73.4)	14 (3.9)

Nursing Science Nursing (BNSc.) (18.7%), preference for other courses (6.4%), perception that midwifery is not unique enough (5.0%) (Table 4). For post midwifery training, majority would rather prefer specialized nursing training such as psychiatry (60.9%), while only 27.3% expressed a desire for midwifery nursing practice for which they were trained (Table 4). Other career choices are as seen in Table 4.

Awareness of MSS and willingness to participate by cadre of students

Awareness of the existence of the scheme was significantly higher amongst the midwives compared to the nurses and in older participants compared to the younger ones respectively (Table 5). Midwives and older participants (≥25 years) were significantly more likely to participate in the scheme compared to nurses and younger respondents respectively (Table 6).

DISCUSSION

In this study, majority of the participants were females. Similar to the distribution found almost globally, females seem to pre-dominate the nursing profession (US Census Bureau, 2013; HRSA, 2013). Generally, the preponderance of females in the nursing profession could be due to ancient beliefs that nursing was an extension of women's domestic roles or the degrading of a man's prestige or social status especially in patriarchal cultures (Evans, 2004), such as Nigeria. Majority of the participants are below 24 years of age and that logically explains why most of them are single. Statistics have shown that age at marriage in Nigeria is found to be significantly influenced by educational status, women aged 25 to 49 in Nigeria with at least secondary education have a median age at marriage of 22.0years (NPC and ICF Macro, 2009). Since all of our participants were final year students in either nursing or midwifery schools, it is only rational that majority of the respondents

Table 4. Preferred career paths and factors influencing choices.

A. What influenced your choice of studying nursing (N=361)	Frequency (N)	Percentage (%)
Personal choice	283	78.4
Others (family members)	36	10.0
Inability to secure university admission	27	7.5
Others	6	1.7
No response	9	2.4
B. Preferred career post-basic nursing (N=235*)		
Midwifery training	16	6.8
Emergency nursing training	10	4.3
Psychiatry nursing training	55	23.4
Orthopaedic nursing training	4	1.7
Paediatrics nursing training	8	3.4
Peri-operative nursing training	12	5.1
Nurse tutor training	4	1.7
Intensive Care unit/ Anaesthetic nursing training	4	1.7
University education	102	43.4
Work as a nurse	5	2.1
Travel for greener pasture	9	3.8
Others	2	0.9
Don't know	4	1.7
C. Reason for not preferring midwifery post basic nursing (N = 219)**	**Frequency**	**Percentage**
Preference for Bachelor of Nursing Science	41	18.7
Midwifery is not unique	11	5.0
Gender sensitivity (Males believe midwifery is for females)	10	4.6
Not aware of any need for midwifery	11	5.0
No interest or passion for midwifery	50	22.8
Preference for other courses	14	6.4
No response/ Don't know	82	37.5
D. Preferred career post-midwifery (N= 128*)**		
Midwifery	35	27.3
A/E	6	4.7
Psychiatry nursing	78	60.9
Orthopaedic nursing	4	3.1
University education	3	2.4
Don't know	2	1.6

* - Addressed student nurses only ,**- All student nurses (235) minus those who had preference for midwifery, ***- Student midwives only.

were single. Poor awareness (33.8%) of 'foot soldiers' needed to ensure success of the initiative and a consequent reduction of the poor national index may pre-suppose to a large extent some inadequacy with regards to sensitization or awareness campaigns by the federal government.

The United Nations Population Fund (UNFPA) has canvassed the need to establish more schools of midwifery, particularly in states where there is no school of midwifery stressing that the underlying factor that contributes to the high mortality figures may not be unconnected to a low skilled birth attendance rate (UNFPA, 2014a). Contrary to this, our study established that an overall dismal proportion of respondents (19.1%) knew the year when the scheme was launched while less than half of the participants (48.4%) were able to correctly identify the objectives for creating the scheme despite the fact that the scheme was launched 5 years ago. Results of this study expose the grim situation and fundamental program implementation deficiencies, which may not aid the success or the objectives for which the scheme was created. Only 19.9% of respondents believe

Table 5. Bivariate associations between cadre, age-group, sex and awareness of MSS**.**

Variable	Awareness of MSS		Chi square	P-value
	Yes	No		
Cadre				
Nurses	34 (14.5)	201 (85.5)	118.0	<0.001
Midwives	90 (71.4)	36 (28.6)	-	-
Age-group				
<25	70 (28.6)	175 (71.4)	11.3	<0.001
≥25	54 (46.6)	62 (53.4)	-	-
Sex				
Male	6 (23.1)	20 (76.9)	1.58	>0.209
Female	118 (35.2)	217 (64.8)	-	-

Table 6. Bivariate associations between cadre, age-group, sex and willingness to participate in MSS.

Variable	Willingness to participate in MSS		Chi square	P-value
	Yes	No		
Cadre				
Nurses	19(8.1)	216(91.9)	99.50	<0.001
Midwives	70(55.6)	56(44.4)	-	-
Age-group				
<25	46 (18.8)	199 (81.2)	14.18	<0.001
≥25	43 (37.1)	73 (62.9)	-	-
Sex				
Male	4 (15.4)	22(84.6)	1.30	0.255
Female	85(25.4)	250 (74.6)	-	-

that every qualified nurse ought to participate in the scheme while 22.7% believed that it was a properly implemented or sustainable scheme. The preponderance of skilled personnel in urban regions as established in recent studies (UNFPA, 2010) crave for a need for the government to incorporate into the curricula of students a course that enlightens students into the advantages of the scheme and the need for participation. Since maternal mortality is higher in Northern Nigeria and in the rural areas compared to the urban (Doctor et al., 2012; Global One, 2012), it is recommended that some form of incentives, either financial or non-financial should be introduced into motivating skilled nurses and midwives to these remote areas, particularly targeted towards student nurses/midwives who may not be interested in participating in the scheme (75.3%) as our study has shown. Even though financial incentives have been proven to a commonly employed strategy to improve health worker motivation and retentions in specific conditions (MHNIP, 2013; CMS, 2012; RANIP, 2014), it is also worthy to note that proper implementation of financial incentives requiring careful planning and management is pertinent to avoid loss of moral, staff grievances or counter-productive consequences (Ditlopo et al., 2013).

It is quite consoling that a greater proportion (43.4%) of the graduating class has the correct knowledge for which the scheme was established. Sadly, studies continue to expose gaps in service that limit efficiency and productivity in delivery of services. These include but are not limited to, non-availability of partographs, enabling environments or adequate equipment (Opiah et al., 2012). When asked what was the main motivation for choosing nursing as a profession, majority (78.4%) attested the source of motivation to personal choice and desire, however, the desire for most of the students to venture into other nursing specialties such as university education (43.4%) or psychiatry nursing (23.4%) corroborates the findings of Abbaszadeh et al. (2010) that asserts an increasing students' knowledge of majors and careers. The desire of nursing students to pursue a university degree (43.4%) or midwives preferring other

specialties (68.7%) could also imply a fundamental problem with the academic environment in which students are subjected to. Amongst the midwives in graduating class, only 27.3% would opt for midwifery career that they were primarily trained for; and only 6.8% of graduating nurses are willing to progress to midwifery training. According to Divaris (2008), ''the 'ideal' academic environment may be defined as one that best prepares students for their future professional life and contributes towards their personal development, psychosomatic and social well-being''(Divaris et al., 2008). The desire of nursing students to pursue a university degree could also imply desire for some degree of job satisfaction or job security from towing the academic line as most of these students attested to lofty dreams of becoming 'respected professors' someday rather than risk being forgotten in some remote areas trying to reduce maternal mortality. Some literature have proposed detailed emphasis into personal traits which may explain trends in professions such as job efficiency and satisfaction, or desire to pursue expected lines (in this case-midwifery compared to other specialties as observed in our study) (Abbaszadeh et al., 2010; Adib-Hajbaghery and Dianati, 2005).

Intriguingly, most midwifery students (60.9%) would rather abandon all midwifery skills to attend to the mentally disturbed; a finding that warrants further studies to establish facts why this is preferred compared to midwifery or what makes it more lucrative. Majority did not opt for midwifery but for other specialist because midwifery is generally seen as 'old persons' nursing career while others such as psychiatry nursing, emergency or theatre nursing are perceived to be more challenging and are accorded some enviable degree of respect which they perceive is not bestowed on midwifery. More so, pursuing further studies in a university goes with better respect and could make them to be seen at par with peers who are university graduates and thus respected as such. However, the danger in nurses pursuing university education, among many, includes the indirect depletion of the workforce to basic nursing services as majority may want to take up career in teaching; work in other areas of the health sector such as non-governmental organizations (NGOs); or even going for higher university degrees to pursue higher academic career goals. It is likely that the higher the academic attainment of such a person, the more unlikely that such a person will take up a basic clinical nursing and or midwifery job in a health facility, much less accept to be posted to a rural area for the purpose of the MSS. While pursuing a university education in nursing and related disciplines is not an unwelcome development, however, it goes without saying the negative consequences that may affect the MSS and other basic clinical nursing practice. In the long term, what looms is a resultant depletion of the pool of potential midwives who could be recruited into the scheme. The authors dare to postulate that, in the absence of a targeted designed incentive package to encourage young nursing graduates to embrace midwifery as a career, the sustainability of the scheme is threatened and which could lead to the defeat of the aim of the MSS in its entirety.

For the scheme to achieve the purpose for which it was established, it has to be firmly rooted and sustainable. This in itself requires, among others, an adequate pool of skilled birth attendants adequately nourished through the nursing and midwifery training institutions (UNFPA, 2014). If however, interest in other nursing specialties and higher degrees persists as shown in this study, without concerted efforts to improve interests in midwifery as a career, the sustainability of the scheme will be compromised.

LIMITATIONS OF THE STUDY

Our study investigated only graduating nurses and midwives from the Southeastern Nigeria that has the low maternal mortality rate relative to other regions (Doctor et al., 2012; Global One, 2012). This considerably limits the generalizability of our study to other parts of the country especially the Northern Nigeria that has very poor maternal mortality indices. It may be logical to deduce that poor awareness in nurses and midwives in southwestern Nigeria is a fall-out of relative organized maternal health care services compared to other parts of the country. Further studies in other parts of the country are advocated for in order to establish the national state of awareness or knowledge of MSS in other parts of the country. Even though our study cannot be generalizable based on this limitation, nevertheless, our study provides a good background on which many more extensive studies may be established. Our study also examined combined levels of awareness and willingness to participate in the scheme for both nursing and midwifery students. This may have concealed salient findings that would have been pertinent in identifying facts or trends that are particular to individual groups. Studies on disaggregated group of students are also advocated for in order to objectively differentiate the level of awareness, perception and willingness to participate in the MSS that separately assess nurses and midwifery students. Furthermore, the study could not explore at a deeper level, the low level of interest of many of the study participants in midwifery as a career because it was quantitative in design. A qualitative study to obtain a better understanding of some of these issues is desirable.

Conclusion

This study revealed poor awareness and willingness to participate in the MSS. Most nurses and midwives, even

though most of them chose the profession out of personal choice, prefer other specialties in nursing rather than progressing to work as skilled midwives. Preference for a degree program in nursing, lack of uniqueness in midwifery career, and lack of interest were some of the reasons reported for the desire for other specialties. A scaling up of awareness and enlightenment workshops by the federal government is recommended to correct misgivings which may limit the awareness or interest in the scheme post-graduation for all nursing and midwifery students if success and sustainability of the scheme is to be feasible. Furthermore, incorporation of a course on MSS is advocated for proper grooming and adequate preparation of the graduating students for the task ahead. Lastly, there is a need to investigate the distal factors such as environmental and academic factors, which may preclude effective learning and acceptance of the scheme amongst all nursing and midwifery schools.

Conflicts of interest

Authors hereby affirmatively declare that no competing interest exists.

ACKNOWLEDGEMENTS

The authors will like to acknowledge and appreciate all the Heads of Nursing and Midwifery schools sampled for their cooperation and assistance during the data collection process. To all the final year students who volunteered to participate in the research despite their end of year rigorous exams.

REFERENCES

Abbaszadeh A, Borhani F, Mohsenpour M (2010). Compatibility of personality and major among freshman undergraduate nursing students of the Kerman University of Medical Sciences. Iran J. Nurs. Midwifery 15(2):90–95.

Abe E, Omo-Aghoja LO (2008). Maternal mortality at the Central Hospital, Benin City Nigeria: a ten year review. Afr. J. Reprod. Health 12(3):17–26.

Abimbola S, Okoli U, Olubajo O, Abdullahi MJ, Pate MA (2012). The midwives service scheme in Nigeria. PLoS Med. 9(5):e1001211.

AbouZahr C, Wardlaw T (2001). Maternal mortality at the end of a decade: signs of progress? Bull. World Health Organ. 79(6):561–568.

Adib-Hajbaghery M, Dianati M (2005). Undergraduate nursing students' compatibility with the nursing profession. BMC Med. Educ. 5:25.

Agan TU, Archibong EI, Ekabua JE, Ekanem EI, Abeshi SE, Edentekhe TA, Bassey EE (2010). Trends in maternal mortality at the University of Calabar Teaching Hospital, Nigeria, 1999-2009. Int. j. women's health. 2:249–254.

Alvarez JL, Gil R, Hernández V, Gil A (2009). Factors associated with maternal mortality in Sub-Saharan Africa: an ecological study. BMC Public Health 9(1):462.

Archibong EI, Agan TU (2010). Review of Policies and Programs for Reducing Maternal Mortality and Promoting Maternal Health in Cross River State , Nigeria. Afr. J. Reprod. Health. 14(3):37–42.

Ashir GM, Doctor HV, Afenyadu GY (2013). Performance based financing and uptake of maternal and child health services in Yobe sate, Northern Nigeria. Glob. J. Health Sci. 5:34–41.

Ayede AI (2012). Persistent Mission Home Delivery In Ibadan : Attractive Role Of Traditional Birth Attendants. Ann. Ib Postgrad. Med. 10(2):22–27.

World Bank (2013). World Development Indicators. The World Bank, Washington DC.

Chiwuzie J, Okolocha C (2001). Traditional Belief Systems and Maternal Mortality in a Semi-Urban Community in Southern Nigeria. Afr. J. Reprod. Health. 5(1):75–82.

CMS (2012). Primary Care Incentive payment program (PCIP): Centre for Medicare and Medicaid Services.

Ditlopo P, Blaauw D, Rispel LC, Thomas S, Bidwell P (2013). Policy implementation and financial incentives for nurses in South Africa: a case study on the occupation-specific dispensation. Glob. Health Action 6(19289):138–146.

Divaris K, Barlow PJ, Chendea SA, Cheong WS, Dounis A, Dragan IF, Hamlin J, Hosseinzadeh L, Kuin D, Mitrirattanakul S, Mo'nes M, Molnar N, Perryer G, Pickup J, Raval N, Shanahan D, Songpaisan Y, Taneva E, Yaghoub-Zadeh S, West K, Vrazic D (2008). The academic environment: the students' perspective. Eur. J. Dent. Educ. (1):120–30.

Doctor HV, Findley SE, Afenyadu GY, (2012). Estimating Maternal Mortality Level in Rural Northern Nigeria by the Sisterhood Method. Int. J. Popul. Res. pp.1–5.

Evans J (2004). Men nurses : a historical and feminist perspective. J. Adv. Nurs. 47(3):321–328.

FMoH (2010). National Strategic Health Development Plan 2010-2015. Abuja, Nigeria.

Global One (2012). Maternal Health in Nigeria: a statistical overview. pp.1–12.

Healthcare Services in UNFPA Assisted States of Nigeria (2010). Lagos State Report; UNFPA Nigeria Country Office.

Koblinsky M, Matthews Z, Hussein J, Mavalankar D, Mridha MK, Anwar I, Achadi E, Adjei S, Padmanabhan P, Marchal B, De Brouwere V, van Lerberghe W (2006). Going to scale with professional skilled care. Lancet 368(9544):1377–1386.

Mental Health Nurse Incentive Program (MHNIP)(2013). Australian Government Department of Health; Program Guidelines –June 2013. pp.1–7.

National Population Commission (NPC) (2009). [Nigeria] and ICF Macro .Nigeria Demographic and Health Survey 2008. Abuja, Nigeria: National Populaton Commission and ICF Macro.

NPHCDA (2009). Increasing Skilled Birth Attendance in Nigeria: National Primary Health Care Development Agency-Midwives Service Scheme and PRRINN-MNCH collaboration-an Update.

Opiah MM, Ofi AB, Essien EJ, Monjok E (2012). Knowledge and utilization of the partograph among midwives in the Niger Delta Region of Nigeria. Afr. J. Reprod. Health. 16(1):125–32.

Oyo (2014). The Official Website of Oyo State - The Pacesetter State.

Remote Area Nursing Incentive Package (RANIP) (2014). Human Resources Policy-HR Policy C2. Queensland Governemnt Department of Health.

The U.S. Nursing Workforce (2013). Trends in Supply and Education-Health Resources and Service Administration (HRSA). pp. 1 – 68.

UNFPA- United Nations Population Fund (2014). State of the World Population Report (2014a).The power of 1.8 billion. United Nations Population Fund (UNFPA).

UNFPA-United Nations Population Fund (2014b). Canvasses Support For Midwifery Service In Nigeria; Nursing World Nigeria.

UNFPA-United Nations Population Fund (2014c). The State of the World's Midwifery. A Universal Pathway. A woman's Right to Health-Fast Facts.

U.S Census Bureau (2013). Men in Nursing Occupations; American Community Survey Highlight Report. pp. 1-7.

WHO (2013). Global Health Observatory Data Repository.

WHO (2011) Reviewing Progress, Reviewing Commitment; Progress report on the Kampala Declaration and Agenda for Global Action by Global Health Workforce Alliance, WHO. pp. 1-3.

International Journal of Nursing and Midwifery

Related Journals Published by Academic Journals

- *International Journal of Medicine and Medical Sciences*
- *Journal of Medicinal Plant Research*
- *African Journal of Pharmacy and Pharmacology*
- *Journal of Dentistry and Oral Hygiene*
- *Medical Practice and Reviews*
- *Journal of Public Health and Epidemiology*

academicJournals