



# Food For Kids Mid North Coast

Parents of babies and young children sharing nutrition  
and child feeding information: A peer educator model

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## Abbreviations

AGTHE	Australian Guide to Healthy Eating	HETI	Health Education and Training Institute
APD	Accredited Practising Dietitian	MNCLHD	Mid North Coast Local Health District
CF	Child Feeding	NSW	New South Wales
FFKMNC	Food For Kids Mid North Coast	PNE	Peer Nutrition Educator



# Abstract

## Aim

To determine the effectiveness of peer education for disseminating nutrition and child feeding information between parents of babies and young children.

## Methods

Thirty four parents with infants aged between 0 and 3 years were recruited in 4 Mid North Coast NSW towns to attend workshops and receive nutrition and child feeding training and resources. Consenting participants adopted the role of Peer Nutrition Educators and disseminated the resource information over a 6 month period. Throughout the intervention period participants received additional resources and messages on nutrition and child feeding via a dedicated Facebook page and email. A mixed methods methodology was used to investigate the intervention. Quantitative data was collected via Facebook 'insights' and questionnaires at the conclusion of the intervention period and analysed using chi square and t tests. Qualitative data from semi structured phone and group interviews was collected and analysed thematically.

## Results

At the conclusion of the six month intervention period 28 participants remained engaged as peer educators and 519 people were following the Food For Kids Mid North Coast Facebook page. Posts appeared on newsfeeds on 56,014 occasions and were interacted with (likes, comments, shares and post clicks) on 6133 occasions (11% interaction rate). Associations were found between increased parental child feeding self-efficacy and reach of information shared ( $n=28$ ,  $p=0.03$ ) and Facebook use and occasions of information sharing ( $p=0.04$ ). Child feeding efficacy of participants increased significantly from pre to post study ( $p<0.001$ ). The five main themes that emerged from the data from the peer educator experience were: influences on sharing; sharing mediums; the message and the pitch; trust in information and support.

## Conclusions

This study provides evidence that peer education is an effective approach to disseminating nutrition and child feeding information, which potentially impacts positively on parents feeding practices, children's feeding behaviours and diet quality. Considering the modest resource investment required to implement peer education, this approach potentially offers a cost effective preventative strategy to address obesity and chronic disease.

Keywords - Child feeding, peer education, parent, nutrition, social media





# Executive Summary

## Implications

Peer nutrition education for new parents is viable and cost effective.

The extent of information shared, positive participant perceptions of their study experience and the high study retention rate of 82% provide evidence that parent to parent education is an effective method to deliver nutrition and child feeding information. This model offers a viable, economical strategy for health services to potentially influence diet quality and food behaviour of babies and young children in a rural setting.

Social media is an effective platform for sharing evidence based nutrition and child feeding information.

The potential and appropriateness of Facebook as a sharing medium when compared to print or email is evident from the Food For Kids Mid North Coast (FFKMNC) study. This highlights a need for health professionals to reconsider traditional ways of communicating child feeding information to parents and for Local Health Districts to re-evaluate social media policies.

Information on child feeding practices is more helpful to parents than dietary guidelines

This study demonstrated the popularity, success and novelty of child feeding practices information amongst peer educators and parents. Future programs should focus on child feeding practices and further develop creative, innovative and appealing ways to share this information with parents.

Two distinct research pathways have been paved.

The FFKMNC study highlights two clear research pathways. The first is to modify the FFKMNC model in response to the outcomes of this study, then extend the project throughout rural New South Wales to fully evaluate the reach and scope of the model and to then investigate recipients' perceptions and behavioural change. The second research pathway is to develop, trial and research a peer nutrition education program which targets grandparents who are in caring roles for babies and young children or influential in feeding of grandchildren.

## Context

Dietary patterns and behaviours that develop in childhood track throughout a person's life and contribute to their risk of lifestyle related disease<sup>1</sup>. Australian children aged two to three receive 30% of their energy requirement from energy dense, nutrient poor foods<sup>2</sup> and only eat 35% of the required amount of vegetables, with vegetable intake declining over time in Australia across all age groups<sup>3</sup>.

The Mid North Coast Local Health District is comprised of large and small rural centres<sup>4</sup>, which do not have access to the same level of paediatric nutrition services as metropolitan areas<sup>5</sup>. Successful interventions have predominantly targeted families of obese children<sup>1, 6, 7</sup> and are both inappropriate and too expensive to be delivered effectively to a large rural population<sup>6</sup>. Social media platforms such as Facebook have shown much potential to distribute evidence-based health information<sup>8,9</sup> and can reach specific groups and overcome health access issues faced by rural residents<sup>10</sup>.

New mothers cite the internet, family and friends as their most regular source of nutrition information<sup>10</sup>. Parents' beliefs in relation to child feeding are largely influenced by parenting peer groups rather than by the advice of health professionals<sup>10</sup>. New mothers often form strong social connections with mothers who have infants of a similar age<sup>12</sup>. Peer education (engaged members of general public providing health education on behalf of health professionals) may therefore be ideal, addressing issues of social isolation and delivering a cost effective intervention on a population level.

## Approach

A mixed methods study model was used to determine how effective peer education is for sharing nutrition and child feeding information between new parents, their friends and family. Parents of children aged up to



three years were recruited into a peer education program in four towns across the Mid North Coast Local Health District. Participants received nutrition and child feeding training, resources and program information at an initial workshop and adopted the role of Peer Nutrition Educators, sharing evidence based information and resources on children's nutrition and feeding with friends and family over a six month period.

Additional nutrition and child feeding information was distributed to peer educators via a Facebook page created for the project (Food For Kids Mid North Coast) and by email. Peer Nutrition Educators received follow up phone calls after two and four months and participated in group or individual phone interviews at the conclusion of the study. Qualitative data via semi-structured interviews and quantitative data was collected and analysed to gain a rich insight into peer educators' engagement, involvement and experiences.

## Results

The FFKMNC study results highlighted a number of key findings that have implications for public health nutrition practice. In summary:

- Thirty four peer nutrition educators consented and 28 participants remained actively engaged in the peer educator process for the study duration. The FFKMNC Facebook page had 519 followers upon study conclusion.
- A total of 311 information posts were uploaded to the FFKMNC Facebook page over the six month intervention period. These posts appeared on newsfeeds on 56,014 occasions and were interacted with (likes, comment, shares and post clicks) on 6133 occasions.
- Child feeding confidence and self-efficacy of participants increased significantly ( $P < 0.001$ ) over the intervention period and this increase in confidence was associated with higher information reach ( $P = 0.04$ ). Increased feeding self-efficacy was reported as having a flow-on effect to family and friends, strengthening the messages shared.
- Newer parents were considered to be the most receptive to receiving information on nutrition and child feeding, while family and grandparents were considered the least receptive.
- Peer educators felt adequately supported despite a relatively low amount of face-to-face time and input from the research team.
- The information that was provided as part of the study was perceived as trustworthy by PNEs, their friends and family.

## Further research

- Develop, trial and research a peer nutrition education program which targets grandparents and other older family who are in caring roles or influential in feeding of babies and young children.
- Modification to the current model to include an extended intervention period and larger geographic area in order to increase the generalisability of results is recommended. Throughout this process, further improvements to the current peer nutrition educator model could be explored using participatory action research.
- Implementation of a more strategic and sophisticated social media strategy to include other mediums such as Twitter, Google Plus and Instagram could be used to increase program reach and facilitate sharing of topic specific resources, which can be accessed on demand.
- Investigation into the perspectives of the recipients of information, the effect on their behavioural intention, actual behaviour and changes to their children's diet quality.

## Publish results

The FFKMNC report will be available on the NSW HETI website and distributed to nutrition networks, population health and child health teams and health district executives across New South Wales. The results from this study will be submitted for presentation at relevant conferences and research papers will be submitted to appropriate journals for publication.



# Introduction

The early years of life are a vital stage for interventions that can positively affect the development of dietary patterns, and food related behaviours<sup>1</sup>. As food providers, parents and carers are crucial to the development of healthy childhood eating patterns<sup>13</sup>. This role has become increasingly difficult in the obesogenic environment in which parents are trying to nourish and nurture children<sup>14</sup>. The diet quality of Australian children has deteriorated over the past generation<sup>3</sup> and nearly half of Australia's healthy weight children are destined to become overweight or obese adults, which carries increased risk of lifestyle related diseases<sup>1</sup>.

This report provides a description of the effectiveness of a peer educator project utilising new parents to share information on nutrition and child feeding practices with friends and family. The beneficiaries include health service policy makers, public health, dietetic and Child and Family Health departments who are looking for effective interventions to improve children's diet quality and behaviour, which are cost effective in a measured fiscal environment.

## Background

### Prevention of chronic diseases starts in childhood

Dietary patterns, taste preferences and other food related behaviours that develop in childhood track throughout a person's life, contributing to their relative risk of preventable disease<sup>1</sup>. Eating patterns which are predominantly based on energy-dense, nutrient-poor foods and low fruit and vegetables and an unhealthy weight predispose children to suboptimal growth and increases the risk of developing chronic diseases such as heart disease, type 2 diabetes and certain types of cancer<sup>16, 17</sup>. The most recent data from the Australian Health Survey indicates 6.8% of the adult population meets the recommended intake for vegetables<sup>2</sup>. Children aged two to three only consume 35% of the required amount of vegetables (25% when potato is excluded) and receive 30% of their energy requirement from energy dense, nutrient poor foods<sup>2</sup>. Comparison with previous data shows a decline in vegetable consumption across all age groups<sup>3</sup>. These poor dietary patterns appear to be established at very young ages with a study of 16-24 month olds in Western Sydney showing energy dense, nutrient poor extra food contributed 27% of children's energy intake<sup>18</sup>. A United States study found similarly disturbing trends with energy intake exceeding the estimated energy requirements in infants aged 4 - 6 months, 7 - 2 months, and 12 - 24 months by 10%, 23% and 31% respectively<sup>19</sup>. Such deviations from national dietary guidelines highlight the need to target parents early, as poor child dietary intake is a likely contributor to high and increasing overweight and obesity rates<sup>1</sup>. Obesity is a major public health concern as health service costs attributed to obesity alone are predicted to rise from \$48 to \$66 billion a year in the United States by 2030<sup>21</sup> with Australia likely to follow a similar pattern<sup>3</sup>.

Deterioration in the diet quality of Australians has contributed to the increased incidence of overweight, obesity and lifestyle related disease. This can be partially attributed to a changing food environment, increased food availability and in particular convenience and low cost energy-dense foods<sup>21</sup>. The family environment has also seen changes with over 60% of Australian families with two working parents and 71% of two and three year olds regularly attending either formal childcare or being cared for informally<sup>22</sup>. This has led to changes in family food practices<sup>23</sup> including a decrease in food preparation and family meals<sup>24</sup> and an increase in the demand for more convenient less time intensive processed foods<sup>21</sup>.

### The role and impact of parents on child dietary intake

Parents and carers are the most significant influencers on the development of children's dietary patterns, taste preferences and dietary intake<sup>13</sup>. The majority of children's food is consumed within the home and the food provision of parents and carers can either contribute to or hinder children's development as healthy eaters<sup>13</sup>. Child feeding is reported as causing anxiety amongst parents and children<sup>25</sup> and is considered one of the most challenging aspects of parenting<sup>25, 26</sup>. Although parents desire good health for their children,

they have difficulty translating information into practice and implementing behaviour management techniques in a food environment<sup>11</sup>.

Child feeding practices refer to the behaviours associated with parents or carers providing food to children and are a strong predictor of the quality and quantity of foods consumed<sup>27</sup>. Traditional feeding practices that resulted from food insecurity in previous generations of parents are not appropriate in today's food environment<sup>27</sup>. These practices are characterised by coercing or forcing children to eat, frequent offering of food, using food to comfort children and the notion of "eat everything before you get dessert"<sup>27</sup>. Conversely restrictive parental feeding practices can result in children learning to overeat<sup>28</sup> as restricted foods become more desirable for the child, resulting in overconsumption when these foods are available<sup>29</sup>. Feeding practices are intertwined with culture, tradition and parenting style and time is required to change parent's beliefs, attitudes and perceptions regarding their effect on children's health<sup>27</sup>. It is imperative that nutrition interventions for infants and toddlers include the behavioral strategies that parents can use to convert their feeding intention into practice.

Interventions which have successfully improved children's eating patterns have been predominantly treatment programs for families of obese children<sup>1, 6, 7</sup>. A systematic review of strategies which aim to positively impact on weight and diet in children from 0-5 years showed some level of effectiveness on at least one obesity related behaviour, confirming parents as suitable targets for effective intervention<sup>30</sup>. These programs are not appropriate to be delivered at a population level due to the cost of resources required and the differing factors influencing families of healthy weight children<sup>7</sup>.

## Parents accessing nutrition and child feeding information

The Mid North Coast Local Health District is comprised of large rural centres (population 25,000-99,999) small rural centres (population 10,000-24,999) and other rural areas (urban centre population <10,000)<sup>4</sup>. Rural areas of Australia do not enjoy the same level of access to paediatric nutrition services as their metropolitan counterparts<sup>5</sup>. New mothers are exposed to a limited amount of child nutrition information in antenatal classes and then again when infants and toddlers first attend childcare services<sup>31</sup>. As a large proportion of children do not commence child care until two or three years of age, there is a period of approximately two years in which parents are not routinely exposed to evidence based nutrition messages. This is a critical transitional period in children's growth, development and formulation of food preferences.

The internet, in particular social media platforms such as Facebook, have shown much potential as a vehicle for sharing health information<sup>8, 9, 32</sup>. The capacity to distribute evidence-based health information extensively and within specific target groups with immediacy can help overcome health service access issues faced by rural residents<sup>8</sup>, particularly as internet access continues to improve in rural areas<sup>33</sup>. New mothers cite the internet, family and friends as their most regular source of nutrition information and have indicated a willingness to use social media to share and access nutrition information<sup>10</sup>. Trust in social media sites and content is essential to health information being applied<sup>8, 34</sup> as parents have reported difficulty determining the accuracy and evidence base of internet-sourced child nutrition information<sup>10</sup>.

Parents' beliefs in relation to child feeding are largely influenced by parenting peer groups<sup>11</sup>. Child feeding practices are therefore more likely to be guided by peer influence and social norms rather than by the advice of health professionals<sup>11</sup>. This can be explained by the principles of the Theory of Planned Behaviour whereby behaviour is determined by a complex interaction between attitudes, perceived control, normative beliefs, motivation to comply with norms and how these interactions influence behaviour<sup>11</sup> (Appendix 1).

A peer educator model lends itself well to addressing the barriers to successful delivery of interventions targeting child and infant nutrition in a rural setting. In a health context, peer education is an approach whereby members of the general public provide education on healthy behaviours on behalf of health professionals. Peer nutrition education has been shown to positively affect the intended target behaviours in a number of settings including breastfeeding continuation<sup>35</sup>, lifestyle programs<sup>36-38</sup>, chronic disease self-

management<sup>39</sup>, fruit and vegetable intake<sup>40</sup> and diet quality in families with children<sup>39</sup>. The majority of peer education models involve education being delivered in a structured setting such as a group, class or home visit and require a high level of commitment from the peer educator<sup>35-44</sup>. Some form of reimbursement is frequently used to increase retention of peer educators<sup>42, 44</sup>. Modest improvements in parents' child feeding practices, confidence and knowledge have been observed using a home visit peer education delivery model<sup>37</sup>. Peer education has been used effectively to change behaviours (including diet quality) of college students in the US using a combination of formal education and individual connections made by peer educators<sup>41</sup>. A comprehensive literature search found no other studies which investigated the effectiveness of targeting new parents as peer child nutrition educators using an informal peer interaction model rather than formal peer led nutrition education programs.

## Rationale

New mothers often form strong social connections with mothers who have infants of a similar age<sup>12</sup>. A pilot survey within the same rural locality indicated that a substantial sub set of new mothers were willing to seek evidence based nutrition education and undertake two or more hours of training in view of on-training their peers<sup>10</sup>. The aim of using a peer educator model in the current study was to capitalise on this connectedness while maximising flexibility in nutrition education delivery. Peer groups can produce changes that are longer lived than individual changes as a group's social support and norms are more resistant to change<sup>40</sup>. Such groups offer a potentially important system for sharing evidenced based nutrition information with immediacy that can maximise timing and impact. Peer education potentially addresses issues of social isolation by overcoming the distances that rural new parents are required to travel to access health services and can deliver an intervention on a population level that is cost effective.

A peer nutrition education model that requires minimal face-to-face commitment by participants and relatively small time investment by health professionals was proposed as a means of maximising reach and reducing the barriers to engagement in child dietary change strategies. Social media was the chosen platform to communicate with peer educators and for them to share information on child feeding and nutrition as it met the expressed needs, preferred communication method and geographic limitations of rurally located new parents.

# Methods and Methodology

## Research question

How effective is peer education for disseminating nutrition and child feeding information between parents of babies and young children aged up to three years?

## Objectives

1. To determine the reach and capacity of a peer education model in the dissemination of evidence based nutrition and child feeding information
2. To describe the experiences of new parent peer educators who deliver nutrition and child feeding practice information within their social networks.
3. To determine factors experienced by new parents in their role of nutrition peer educators which contribute to or hinder a peer education model.
4. To assess the acceptability of a peer educator model with new parents who are recipients of nutrition and child feeding information.



## Methodology

A post positivist theoretical perspective was used to conduct this research because it is based on contextual human interpretation and maintains that a reality exists although it cannot be described absolutely. This perspective aligns with the combination of quantitative 'reality' based methods and interpretive qualitative methods employed.

## Study design

A Convergent Parallel mixed methods study design<sup>45</sup> was used to answer the research question. Quantitative and qualitative study methods were used concurrently within the same intervention period to collect data from Peer Nutrition Educators (PNEs). Both sets of data were analysed independently and then interpreted together to maximise the understanding of the quantitative data, the peer educator experience and their relationship to each other.

## Participants and setting

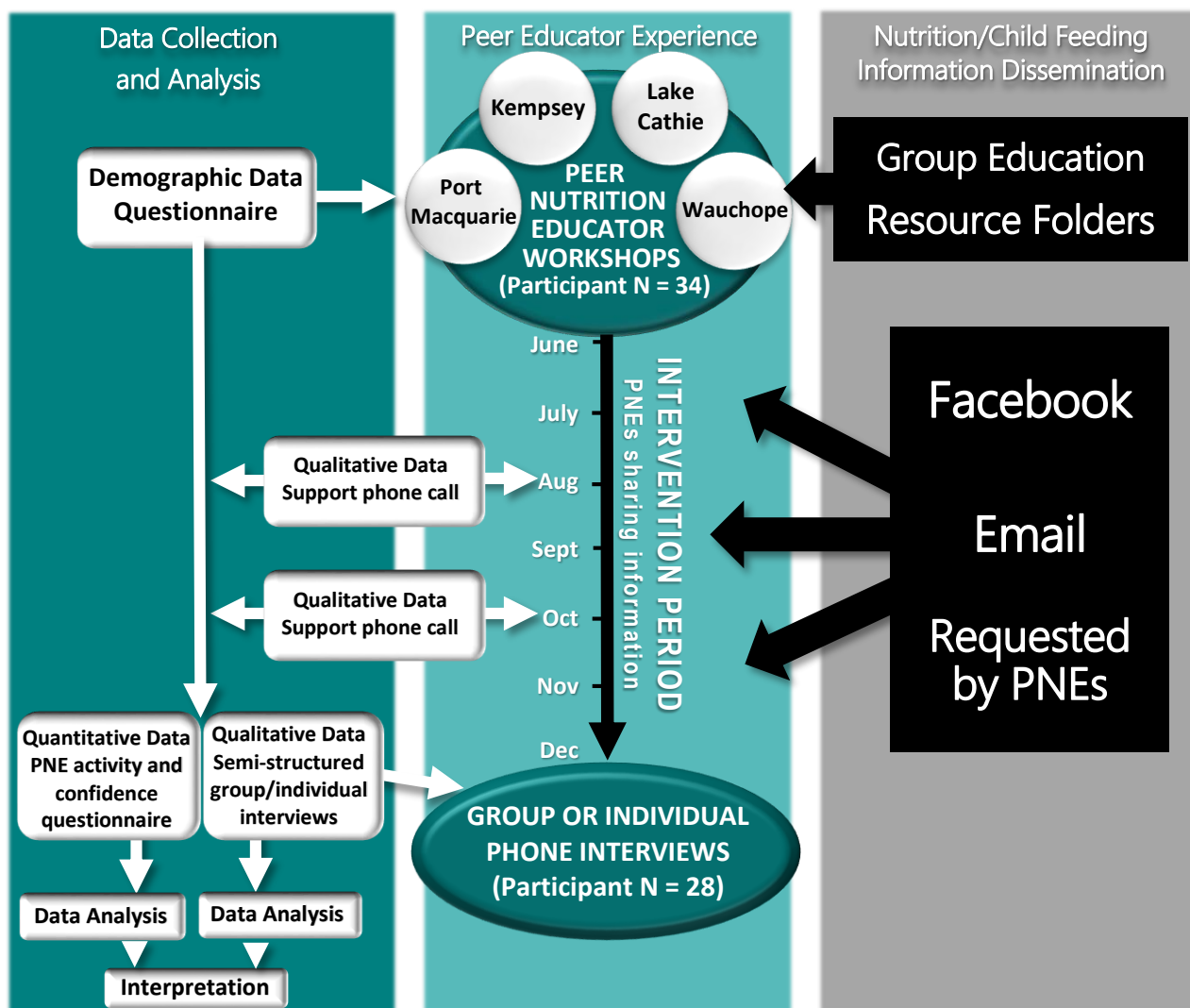
Parents and primary carers of children aged between zero and three years were recruited within the Mid North Coast of NSW, Australia. Parents and primary carers were excluded from the study if they resided outside the Mid North Coast Local Health District, were aged under 18 or if their children's nutrition/feeding practice requirements were influenced by a medical condition. A purposive sampling method was employed, with settings, locations and the sequence of recruitment chosen to increase the likelihood of recruiting a higher representation of rural residing, lower socio-economic and indigenous participants.

Recruitment focused on settings used by parents of children in the target age range. These included long day care centres, preschools, supported playgroups and Child and Family Health facilities. Staff who interact regularly with parents received a detailed overview of the program and were provided with information packs and consent forms (Appendices 2, 3) for distribution to interested parents and carers. Poster displays and newsletter advertisements were used to increase awareness of the study. A total of 18 early education centres and Port Macquarie Child and Family Health Centre were used as recruitment sites. Snowball sampling was used to reach male parents via their female partners who had consented to the study.

## The intervention

Parents consenting to participate in the study attended one of four introductory workshops (Port Macquarie, Lake Cathie, Wauchope and Kempsey). and received evidence based education and print resources on children's nutrition and feeding. Following the workshop parents were asked to announce themselves as Peer Nutrition Educators (PNEs), describe their role in the study and share nutrition and child feeding information to friends and family over six months (Figure 1). Peer Nutrition Educators were contacted twice to be offered support and assistance during the intervention and could access the principal investigator for additional resources and assistance at any time.

The peer educator workshops introduced parents to evidence-based information about children's nutrition and child feeding practices in addition to providing a detailed overview of the study design, rationale, data collection tools and participants role as PNEs (Appendix 4). Activities and group discussions focused on the opportunities, barriers and risks related to sharing nutrition and child information with relevant friends and family. This discussion informed the content and format of resources subsequently developed and provided to PNEs via Facebook and email over the intervention period. A resource folder containing hard copies of handouts on general nutrition and child feeding topics were distributed to each PNE at the initial workshop (Appendix 5). Resources included The Australian Guide to Healthy Eating (AGTHE), introduction to solids information, recipes, common child nutrition issues, food labelling, fussy eating strategies, allergy and intolerance information and a list of links to evidence based websites. Boundaries of the PNE role, referral pathways and adverse event management were also covered. The workshops were facilitated by the principal investigator and piloted with approximately 45 staff in three childcare services.



**Figure 1: Timeline of data collection/analysis, Peer Nutrition Educator (PNE) experience and resource dissemination**

### Intervention information dissemination

The Facebook page Food For Kids Mid North Coast (Appendix 6) was developed as a medium to disseminate nutrition and child feeding information. An explanation of Facebook terms can be found in Appendix 7. At the initial workshops PNEs were encouraged to 'like' and follow the site as a means of sharing the content within (and beyond) their peer groups. One to four messages were posted on the Facebook page each day over the six month intervention period. The Facebook post content and format was guided initially by feedback from the PNE workshop and was modified over the six month intervention period based on 'post' performance and participant feedback. The content for 'posts' on the Facebook page was developed by the research team, shared from other Facebook pages, linked to information on external internet pages or contributed by colleagues and PNEs.

The information posted on Facebook was intended to serve two purposes. The key or higher priority posts (Figure 2) were aimed at improving parents' nutrition and child feeding knowledge and skills. Lower priority posts relating to food and parenting (Figure 3) were aimed to increase Facebook site popularity, encourage page followers and engagement with a secondary goal of increased exposure to nutrition and child feeding messages. A mixture of high priority and lower priority posts were 'posted' over the six month intervention period. Interaction between PNEs and their peers was encouraged by including questions with posts, encouraging page followers to comment on their experiences or to 'like' posts. Priority information posts on Facebook were grouped into four categories: recipe/food ideas; participant contribution; child feeding practices; and general nutrition (Appendix 8).



**Figure 2: Example of a high priority Facebook post**



**Figure 3: Example of a lower priority Facebook post**

Information posted on the Facebook page was scheduled in advance and was initially posted at the approximate times of 7am, 10am, 2pm and 7pm. The information was posted at peak times that users were predicted to be online and either just before or after the half hour or hour mark to reduce competition with other scheduled posts going into PNEs newsfeeds. Process evaluation of the Facebook page was completed monthly using Facebook 'Insights' by the Principal Investigator and a local social media expert. Information and links posted on Facebook were emailed to all PNEs on three occasions throughout the intervention period, ensuring that those who didn't access Facebook received all material and could disseminate it using alternative mediums (e.g. email, print, Twitter, Google Plus).

## Data collection

A demographic data questionnaire (Appendix 9) was completed by PNEs at the initial workshop. Data collected included gender, parent age range, number of children, infant/child age, language spoken, indigenous status, education level and employment status. Additional intervention-related data collected included preferred communication methods, information regarding parenting networks and nutrition beliefs.

At the conclusion of the six month intervention period PNEs attended semi-structured group interviews of approximately 60 to 75 minutes duration. To maximise feedback, PNEs who were unable to attend the group interviews completed individual semi-structured telephone interviews of 20 to 30 minutes duration. A questionnaire containing questions on sharing, reach and number of sharing occasions, parenting and child feeding confidence was completed before the interviews (Appendix 10). The group and individual interviews consisted of the same series of questions focusing on PNEs experiences over the intervention period (Appendix 11). Data saturation was not sought given the limited number of participants. The Associate Investigator facilitated all interviews, assisted by the Principal Investigator who took field notes in the group interviews. Aside from the Associate Investigator, the Principal Investigator and the participants, no-one else was present at the group interviews. All interviews were digitally recorded and electronically sent to a transcribing service for transcription. An invitation was issued to PNEs to review the contents of the transcription for accuracy but all declined.

## Data analysis

Quantitative data collected from PNEs over the intervention period was manually entered into an Excel spreadsheet. Data was transferred from Excel to STATA statistical software<sup>46</sup> for analysis. Continuous data was tested for normal distribution. Some continuous data were then collapsed into categorical data for Fisher's exact test to investigate relationships between variables. Paired t-tests were conducted to detect changes in PNEs child feeding confidence levels pre and post intervention. Statistical significance was set at  $p < 0.05$ .

For qualitative analysis, the first transcript was jointly coded for themes by the Principal Investigator and Associate Investigator to maximise reliability. Transcripts from the remaining group and individual interviews were systematically coded for themes by the Associate Investigator and Principal Investigator independently. Transcripts were initially coded with a colour coding tool within the Word processing program. Initial codes, relationships between codes, and emerging themes were discussed by the Principal and the Associate Investigators. The colour coded data was extracted from the transcripts and further manipulated manually

by the Principal Investigator. Codes and associated quotes were then transposed into an Excel spreadsheet that contained a separate sheet for each emerging theme. This spreadsheet was revised and refined repeatedly by the Principal Investigator, discussed between the Principal and Associate Investigator until final consensus on theme and subtheme allocation was reached.

## Reflexivity

The research team recognises and accepts the influence of the personal experiences and perceptions they bring to this study. The Principal Investigator is a father of two young children and a novice researcher currently participating in the NSW Health Rural Research Capacity Building Program. He is an Accredited Practising Dietitian (APD) and for the past three years has been working in Health Promotion on the Healthy Children Initiative, a settings based obesity prevention program which includes direct interaction in childcare setting with staff and parents. This position has provided extensive insight into the subject matter and access to the recruitment and workshop settings. He has over 10 years' experience working in dietetics and children's nutrition. The Associate Investigator is a mother of three and an APD with over 20 years' experience. She is experienced in child feeding and infant nutrition, having completed a PhD in this field of research. The Principal and Associate Investigators were known to several participants in both a community and professional context prior to study commencement.

## Ethics

Ethics permission was approved for this study on the 31<sup>st</sup> March 2014 by the North Coast New South Wales (NCNSW) Human Research Ethics Committee (HREC), No. LNR 084. Four amendments were accepted during the research period. Site research authorisation was obtained on the 4<sup>th</sup> April 2014 - LNRSSA/14/NCC/20.

# Results

Thirty four parents provided consent, attended a PNE workshop and were therefore eligible to participate in the study. Two consenting parents were unable to attend a workshop and one parent attended a workshop but did not provide consent to participate. All PNEs who consented to the study were parents of children despite other primary carers being eligible to participate. Six PNEs did not continue for the duration of the study. Two PNEs withdrew within two months and four withdrew from the study at the four month follow up call. Twenty eight PNEs participated in all phases of the study and provided complete sets of data.

The study cohort were predominantly female (88%), aged between 25-34 years (74%), non-indigenous (97%) and tertiary educated (80%) (Table 1). Eighty six percent of PNEs were employed (full or part time) or on maternity leave. The number of page followers on the 'Food For Kids Mid North Coast' Facebook page reached 519 people at the conclusion of the intervention period. Of these, 492 (93%) were female, 405 (78%) were aged 25 to 44 years and 244 (47%) page followers were residents within the MNCLHD (Appendix 12).

**Table 1: Demographic information of participants who attended a Peer Nutrition Educator workshop (n=34)**

Parent gender		Parent age range		Indigenous status		Parents group	
Male	4 (12%)	25-34 years	25 (74%)	Indigenous	1 (3%)	Attend group	27 (80%)
Female	30 (88%)	35-44	9 (26%)	Non - Indigenous	33 (97%)	Not attend group	7 (20%)
Parent education		Employment status		Number of children		Age - youngest child	
University	22 (65%)	Full time	7 (21%)	One child	11 (32%)	0-8 months	11 (32%)
Trade/vocational	5 (15%)	Part time	14 (41%)	Two children	18 (52%)	9-15 months	8 (24%)
Year 12	5 (15%)	Maternity leave	8 (24%)	Three children	3 (8%)	16-23 months	8 (24%)
Other	2 (5%)	Not working	5 (15%)	Four Children	2 (5%)	Over 24 months	6 (18%)

A total of 311 posts were uploaded to the FFKMNC Facebook page between the 14<sup>th</sup> July 2014 and 4<sup>th</sup> December 2014. Of these posts 133 (43.75%) were photos with accompanying messages, 163 (53.62%) were links to external pages/websites and eight (2.63%) were status updates. These posts appeared on Facebook users newsfeeds on 56,014 occasions (Figure 4), with active engagement (likes, comment and shares) over this period totalling 2,112 (Figure 5) and 4,021 post clicks to external web pages. The number of occasions of sharing and reach of information shared reported by PNEs are shown in Appendix 13.





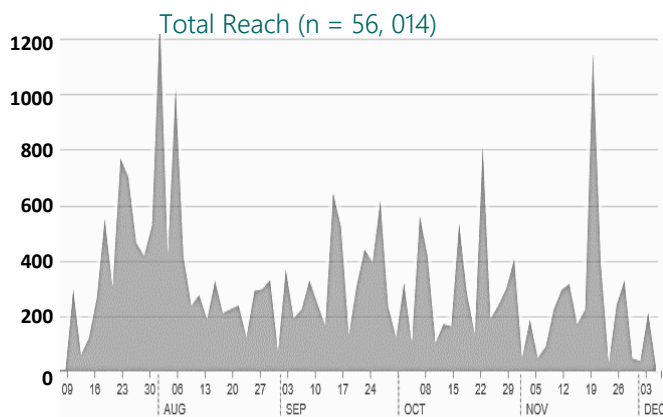


Figure 4: Reach of posts on FFKMNC Facebook page<sup>47</sup>

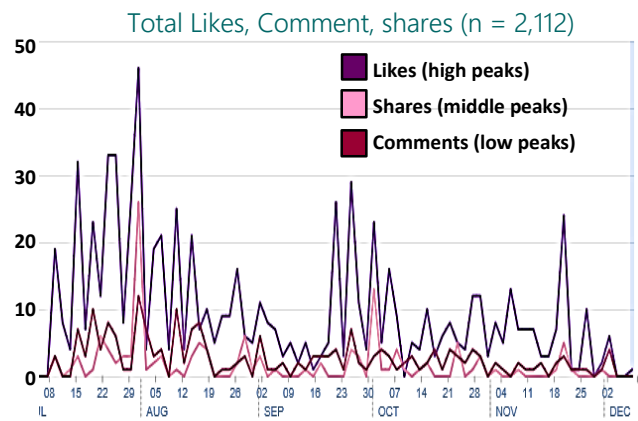


Figure 5: Active engagement in FFKMNC Facebook page<sup>47</sup>

## Emergent themes from peer nutrition educator experience

Results have been reported as the themes from qualitative analysis, with substantiating quantitative results reported in respective themes. Five major themes emerged from the group and individual interviews and have been used to describe PNEs experience sharing nutrition and child feeding information over the six month intervention period. The themes were; influences on sharing; sharing mediums; the message and the pitch; trust in information and support. Each theme overlapped to some extent with at least one other theme.

### Theme 1 - Influences on sharing

Influences on sharing encompasses the factors reported by PNEs which contributed positively or negatively to the process of sharing information on nutrition and child feeding. Some factors influenced the PNEs, some influenced the recipients of information and some influenced the interaction between PNEs and recipients. An association was identified between increased child feeding confidence and number of people that information reached ( $n = 28$ ,  $p=0.03$ ) and Facebook usage and number of sharing occasions ( $n = 27$ ,  $p=0.04$ ). The number of children, age of youngest child, child feeding confidence and parenting confidence did not influence the amount of information shared or reach (Appendix 15).

#### 1.1 Stage of parenting

Strong views were expressed by PNEs concerning parent receptiveness to peer nutrition education. The stage of parenting (age/s of recipients' child/ren) was described by PNEs as a determinant of how receptive or open parents were to receiving nutrition and child feeding information. Parents with younger children were identified as being more open and demonstrating a willingness to learn.

***"So catching that new parent...is like gold because they're just kind of [open] - once you go through a few years of it you feel confident in what you've been doing even if it's not necessarily right" Mother of 2 (aged over 24m)***

Parents with an older first child or more than one child were considered to be less receptive. PNEs felt that trying to share information with recipients at this parenting stage was akin to trying to convert them.

#### 1.2 Confidence and self-efficacy of Peer Nutrition Educators

All PNEs who completed the study rated their parenting ability as average or better, with no reports of trouble with parenting. The proportion of parents reporting having trouble with child feeding decreased from 29% ( $n = 8$ ) to 4% ( $n = 1$ ) over the intervention period, while child feeding efficacy scores increased from 3.29 to 4.29 ( $+1.0$ ,  $p<0.001$ ) (Appendix 15). Peer Nutrition Educators confidence in parenting and child feeding ability pre-study did not significantly influence the amount or reach of information shared, although an increase in child feeding efficacy over the intervention period was associated with the reach of shared information ( $n = 28$ ,  $p=0.03$ ).

Qualitative analysis indicated that confidence in parenting and child feeding and a generally confident personality were significant factors in successful information sharing. Peer Nutrition Educators expressed the opinion that their prioritisation of child feeding (and parenting in general) positioned them well to share information with peers and family.

***"We're coming to this because we're probably on the more motivated end of parenting so there are other people that are less educated and have less income and they're less motivated" Mother of 2 (aged 6-8m, over 24m)***

Increased confidence was reported by PNEs in their child nutrition and feeding knowledge from study participation.

***"So I thought the information was actually first class. I'm like an encyclopaedia on children's diets" Father of 3 (aged 0-6 m, 16 - 18m, over 24 m)***

This increase in confidence was amplified if PNEs first applied the information themselves and found it effective in improving their own practices or observed positive changes to their child/ren's dietary intake.

***"I had no idea - here I was trying to force it - after the workshop that was the big take home for me.....as a parent - we determine when, where, how. Then they determine if they eat it." Mother of 2 (aged 6 - 8m, over 24m)***

The improvement in PNEs own child feeding practices were reported to have a positive flow on effect within peer groups. Peer Nutrition Educators felt that demonstrating and role modelling child feeding practices strengthened the messages compared to sharing messages verbally.

***"Because they've seen me. They're like oh, he's eating more than what he used to and I'm like that's because I've stopped hassling him. ...." Mother of 1 (aged 16 - 18m)***

Conversely, the confidence of the PNEs in sharing information was reported as being inhibited if the recipient expressed strong opinions or had firm beliefs that contradicted the evidence based information being shared.

***"I tended to ... be a bit more cautious ...I mean my personality is that I tend to not want to get into a conflict or an argument and that comes down to my personality more than the research project" Mother of 2 (aged 12 - 15 over 24m)***

### 1.3 Receptiveness of peers

Receptiveness of peers was consistently reported as an influential factor in determining whether the PNE mentioned child feeding/nutrition.

***"Sometimes I wasn't overly comfortable in bringing up some of the things that I had learnt .... But then other times it was great.... I felt confident with this particular group because they were so open to it. " Mother of 2 (aged 0 - 6m, 24m)***

The relative importance placed on appropriate child feeding and nutrition by recipients was considered to affect their level of receptiveness. Generally, higher perceived importance equated with higher receptiveness. However, if recipients placed a high importance on child feeding but disagreed with the information being provided, this was challenging for the PNEs.

***"The ones who are maybe stuck in their beliefs or believe really heavily that they're doing the right thing or they're a really confident person and they're really sure of themselves and that, maybe not so much." Mum of 2 (aged 2 - 15m, over 24m)***

Peer parent recipients with whom PNEs had closer relationships were reported as easier to share child feeding messages with, as less familiarity created less certainty of how recipients would respond. A PNE who was involved in two parents groups and summarised this theme well.

***"...the first mum's group who I did most of the sharing with, just because I saw them more regularly... We've known each other for a couple of years now" Mother of 2 (aged 0 - 6m , over 24m)***

While familiarity was a positive influencing factor with peers, the opposite was found with family. The majority of PNEs reported family (and in particular their parents or their partners parents) were the most reluctant recipients of shared information and resisted implementing changes to child feeding practices. Considerable frustration was expressed by PNEs about this issue as grandparents were often in caring roles for children and therefore influential in child feeding.

***"But when it comes to family they're not receptive at all. They would rather tell me how to do everything than listen to what I have to say." Mother of 2 (aged 16 - 18, over 24)***

***"I suspect nothing you could've told me would've helped with my mother...." Father of 2 (aged over 24m)***

The difficulty and frustration expressed by PNEs in attempting to share with family were not reported when PNEs shared nutrition and child feeding information with others in caring roles for children, such as childcare staff.

## Theme 2 - Sharing mediums

Over the six month intervention period child feeding and child nutrition information was provided to PNEs to share via Facebook, email, verbally or in print format with friends and family. Verbal (n = 24, 86%) and Facebook (n = 17, 60%) were the most used mediums, with print resources and email used by 10 (36%) and

seven (25%) of PNEs respectively. An association between Facebook use and sharing activity ( $n = 27$ ,  $p=0.04$ ) was observed but no other associations between sharing mediums and variables were found (Appendix 16).

## 2.1 Comparing sharing mediums

A diverse range of opinions about the pros and cons of various sharing mediums were reported by PNEs. The printed resources distributed in folders at the introductory workshop were a less preferred medium for sharing child feeding/nutrition information. Hard copy resources were perceived to be outdated and cumbersome. The only reported use of printed resources was to maximise reach by offering to people who did not engage with Facebook.

***"... a lot of the Facebook posts were shared into the group as well, so it's not like if they didn't see the folder they didn't see anything. We shared stuff that you shared on the page." Mother of 1 (aged 9 - 11m)***

Sharing information verbally was considered by PNEs to have some benefits over other mediums. Face-to-face contact allowed for responsive, impromptu information sharing and catered more specifically to recipients needs than Facebook posts. This was reported by PNEs to be a less overt way to approach sharing information because informal conversation was already happening within groups. Parents' group gatherings often involved meal or snack times, which provided opportunities to incidentally prompt feeding discussion.

***"The way I approached it was more through my mother's group.... I didn't so much do it as a big group discussion type thing, just if something happened to come up in conversation I'd just go along with it." Mother of 1 (12 - 15m)***

The resources posted on Facebook were also distributed to peer educators via email on three occasions over the six month intervention period. Generally email was perceived to be a less effective method of sharing because the information was not as readily accessible for responsive sharing. A need for an online repository of resources which could be accessed upon demand was identified by some PNEs.

***"If there was somewhere that you could just access some resources you could just flick onto people that would be handy. Just the initial folder, if there was an electronic version of that" Mother of 2 (aged 0 - 6m, over 24m)***

Frequent Facebook use was reported by PNEs to potentially reach far beyond the initial target audience.

***"... I mean when someone else shared it on my site I think they had something like 700 friends. So once they comment on it, it's just spreading it virally" Mother of 2 (aged 6 - 8m, over 24m)***

Child feeding and more general parenting issues were seen by PNEs as topics which required a degree of sensitivity to avoid any distress or conflict with their peers. Particular parents could be identified by PNEs within their peer groups who they felt would benefit from certain messages. Facebook was viewed as an effective method to address child feeding practices without appearing to directly target those parents.

***"There were a couple of people that I thought of immediately and I tried to tag them in posts that were relevant and share, like just chat about it in general without being too pushy..." Mother of 2 (6 - 8m, over 24m.)***

## 2.2 Accessing Facebook

Those who used Facebook to share information tended to be already frequently using the medium for communication. Those who didn't use Facebook appeared to be staunchly opposed to its use both for sharing and general use. Facebook was described as a medium for the PNEs generation that would not necessarily be effective when trying to access other generations such as children's grandparents. This perception was supported by the age range of Food For Kids Mid North Coast Facebook page followers (Appendix 12) with only 4% over the age of 45 years.

***"I think it depends on your different generations. I mean I'm probably from a digital age, but I'd prefer to sit there and read something on Facebook and online than sit and read through a paper book". Mother of 1 (aged 9-11m)***

Regular Facebook using PNEs described the ease with which information could be shared, accessed by recipients and then shared by the recipients within their peer networks. Facebook users described having constant access, enabling optimal timing of information sharing.

***"Mainly it was just evident on Facebook. Being able to see friends from my mum's group then sharing on some of the articles and pieces of information. Yeah, I thought that was nice." Mother of 2 (aged 0 - 6m, over 24m)***

***"It's the technology... Your phone is like one of your hands now isn't it?" Mother of 2 (aged 6 - 8m, over 24m.)***



Facebook was frequently used by PNEs in their limited recreation or “down” time. This time was reported to allow continuation of unfinished conversations from parent groups and to access and share nutrition and child feeding information.

*“Because I’m normally Facebooking at either first thing of a morning or last thing at night, it’s when I’ve got my kids off to bed or my kids are yet to wake up.....I read what I find and then that might send me off to a different link to further investigate things.” Mother of 2 (aged 19 - 21 m, over 24 m)*

Facebook use was reported by PNEs to provide continued engagement in the study and the sharing process. Posts appearing on peer educators’ newsfeeds helped keep nutrition and child feeding at the forefront of their consciousness and thus prompted sharing. Those PNEs who weren’t using Facebook were more likely to report losing momentum with the project

*“It was good ..... using Facebook because that would come up on my feed when I checked it. I know it was just a neutral way to trigger my thought about food” Mother of 2 (aged over 24m)*

*“If I was on Facebook, I probably would have had more interaction with it. I’m.....a retard on that.” Mum of 1 (19-21m)*

## Theme 3 – The message and the pitch

The PNE workshop focused equally on children’s nutrition and child feeding practices. Information provided in the PNE resource folders, on Facebook and via email included these topics plus practical food ideas. Figure 6 shows the topic areas that PNEs shared over the intervention period, with child feeding related posts constituting half of the total shares.

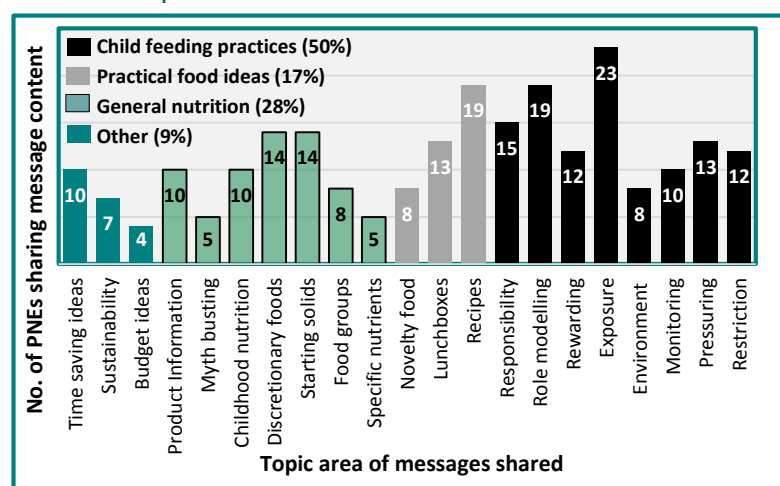


Figure 6: Number of PNE’s sharing nutrition/child feeding topics over intervention period

### 3.1 What interested PNEs?

It became apparent early in the intervention period from workshop feedback, Facebook sharing and first follow up phone calls that the focus of interest from PNEs, their peers and family was on child feeding practices. The guidelines around child feeding practices were reported to provide parents with new, simple and effective feeding strategies to implement.

*“That little card (feeding responsibilities) that we had in our wallets, once I pulled those out people started going, oh can I have a look at that? It’d get passed around and then I’d bring more next week.” Mother of 2 (aged 6-8m, over 24m)*

This positive response reported from peers and family motivated the PNEs to share child feeding information. In contrast, it was felt that the nutrition messages were very familiar but hard to implement.

*““This is good, this is good, that’s not’. People have heard that all before. I found the biggest thing for me that was new and made people sit up and listen was the child feeding practices.” Mother of 4 (twins aged 16-18m, 2 over 24m)*

A general lack of knowledge but high level of interest from recipients about the recommended serves from the core food groups for specific age groups was reported by PNEs.

*“We sat down and we worked it out. She decided that it wasn’t so much that she was possibly having too many meals or anything like that, but maybe her serving sizes were more than what they should have been.” Mother of 1 (aged 9-11m)*

Practical food ideas and recipes were popular with PNEs, their peers and family, particularly those who expressed concern about lack of ideas for healthy foods their children would eat. Some posts were intended to increase intake of particular food groups or nutrients, others were child feeding strategies that had been considered successful.

*“A friend came over the other day and she took that, well she just took a copy of that (fact sheet on healthy lunchboxes). You know, what the hell do I feed these kids?” Mother of 2 (twins aged 9-11m)*



### 3.2 'Selling' the messages

Peer Nutrition Educators provided feedback over the intervention period that informed Facebook post content and format modification. Suggestions included shorter posts, ensuring that attractive photos accompanied posts and the inclusion of content requested by participants. Peer Nutrition Educators identified a range of factors relating to message presentation and 'marketing' which they felt would determine whether or not posts would attract the attention of recipients. Recipients were described as being time and energy poor and therefore messages that required less effort to engage with were considered to be more popular.

***"The ones that were quite short and straight to the point I shared and found that a lot of the people in my social group had actually seen them.... I found video clips were really popular."* Mother of 2 (aged 19 - 21 m, over 24 m)**

Messages were considered easier to share if they were framed to emphasise the parent benefits of changing a feeding practice in addition to the benefits for the child. In particular, the 'division of responsibility' message, which emphasises handing over to the child the responsibility for deciding how much food to eat, was seen to directly benefit parents by reducing tension around feeding. This simple message resonated with PNEs, their peers and family.

***"We're selfish creatures aren't we? Yeah and what makes it easier for me as a parent. I think a lot of the Facebook posts and things did go down that path..."* Mother of 2 (aged 6 - 8m, 2 years.)**

In addition to having access to suitable messages to 'sell', the effectiveness of message delivery by PNEs was influenced by factors such as their level of empathy with parents in relation to child feeding difficulties.

***"I got very frustrated trying to explain to them about nutrition and that it was very frustrating having to bite my tongue trying to explain to them that you can have quick and easy meals that are healthy. They'd be like, oh but my kid won't eat that."* Mother of 4 (aged 6 - 8m, 3 over 24m)**

### 3.3 Child feeding/nutrition attitudes and perceptions

Peer Nutrition Educators perceived that they personally placed a higher priority on child feeding than their peers. They expressed concern that a peer nutrition education project was unlikely to target those most at need, including lower socio-economic and less educated parents. If friends and family of PNEs were considered to be a higher education level, a level of surprise about poor feeding practices was evident.

***"(My) friends are quite well educated but it seems like people are sliding into complacency. If you think about the people at the other end of the spectrum who wouldn't access something like this it's a bit scary."* Mother of 4 (aged 16 - 18m, 3 over 24m)**

A consistently reported frustration related to the demonstration and justification of poor feeding practices by family, particularly older family members. Older generations generally were considered to have lower standards of what was acceptable practice.

***"One of the Mums in my group said 'I was at my parents' the other day and I dished up afternoon snacks of tomatoes and capsicum for the girls and my parents were shocked. They said 'What are you feeding them? We didn't feed you food like that and you guys turned out okay', and I said 'Yeah Mum really, well I'm fat'"* Mother of 2 (aged 0-6m, over 24m)**

A common discussion point was the perceived difficulty of changing feeding practices. It was felt by PNEs that parents would not persist in implementing appropriate child feeding practices due to the initial tantrums and extra work required before they were rewarded for effort with improved feeding. When perceived barriers to the difficulty in child feeding were successfully challenged PNEs reported parents were surprised at the simplicity.

***"One of the things ..... was the misconception about all of these gimmicky foods and that it doesn't have to be that hard. It can just be normal food..... It doesn't have to be in a packet. Just to get that through to people that it's not that difficult to feed your children"* Mother of 4 (aged 16 - 18m, 3 over 24m)**

***"I think people read it because they're interested in it and then it's like a light bulb moment, like oh, is that all we have to do"* Mother of 4 (aged 16 - 18m, 3 over 24m)**

Other parents were not willing or able to have their ideas challenged:

***"...in terms of the information that I was trying to communicate they put up a barrier; didn't want to know about it. Because in their experience it was something else and they weren't open to different information"* Mother of 2 (aged 6-8m and over 24m)**

## Theme 4 -Trust

It was reported by PNEs that an overwhelming array of information on nutrition and child feeding was available from a variety of sources outside of the study. It was considered to be difficult to determine what was evidence based while also being, practical and timely at each stage of parenting. The active engagement of FFKMNC Facebook posts provides a quantitative indicator of trust with 'like, comment or shares' and clicks on external web page rate totalling 11% of total reach.

### 4.1 Credibility of information source

The trust that PNEs, their peers and family had in the shared information grew as feedback about positive outcomes was shared. Attempts by PNEs to share nutrition and child feeding information within peer groups and family prior to the intervention had received a mixed response, possibly due to a lack of consistency in delivery and lack of trust in information sources. Participation in the study was believed to legitimise information sharing.

*".. some of my friends were.... here (she) goes again. But because I had the backing of the access to nutritionists and dietitians, I think they were more happy to listen to me, it wasn't just me, I've read a book kind of thing." Mother of 4 (aged 6 - 8m, 4 over 24m)*

Conversely, some recipients were considered by PNEs to be reluctant to trust information provided as part of the study if they had alternative sources of information in which they placed more trust. A subset of recipients placed more trust in alternative rather than evidence based sources of information while others placed more trust in 'tried and tested' feeding practices which were passed on through family.

*"They were happy to go along with what their mothers or mother-in-laws were telling them. It didn't matter how factual my stuff was, that they would say, oh well it worked for my mother." Mother of 4 (aged 6 - 8m, 4 over 24m)*

### 4.2 Preserving integrity of information

Some PNEs expressed concern about untrained parents sharing information about nutrition and child feeding. They felt that there may be some misinterpretation of the facts due to a lack of knowledge base. This was more particular to sharing verbally than for a resource that could be shared intact without amendment.

*"But the Chinese whispers game comes into play with anything that's verbally passed on ... people will take the information in, but they'll distort it to fit in with their own. Something that's written ..... won't lose it in the transfer of information down the line then and get distorted so much" Father of 2 (aged over 24 m)*

## Theme 5 – Support

The retention rate of 28/34 (82%) of study participants demonstrates that participants obtained adequate support throughout the intervention. Feeling supported also emerged from the interview data as a key theme. Support was reported to be provided from a variety of sources both within and external to the study. The perceived level of support was a determining factor in whether the research experience was positive or negative for PNEs.

### 5.1 Support from recipients

Support was felt by PNEs if peers and family showed an interest in the information they were providing as part of the study. Positive early interactions acted as a catalyst to progress child feeding conversation, creating a snowball effect.

*"Members of playgroup were always very receptive and everyone was on very similar pages in terms of what they expected and what they were trying. Information sharing was two-way, which was good" Mother of 1 (aged 9 - 11m)*

Positive feedback from peers after implementing suggested child feeding strategies strengthened PNEs resolve. The feeling of contributing positively to their friends' lives was described by PNEs as provided additional support and giving extra meaning to their study involvement.

*"So some who are probably a bit lost really appreciated the information and were really pleased to have it and take it on board and give it a go" Mother of 1 (aged over 24m)*

## 5.2 Shared participation

Several PNEs joined the study and attended the introductory workshop with either a friend or their partner. They reported the initial and continued support of having someone to share the entire study journey with as being valuable. These PNEs described additional momentum and less pressure to find support within peer groups than others who had attended alone.

***"A couple of the mums went to the workshop.....so having those numbers of people, a certain number... a critical mass"***  
***Mother of 2 (aged 6 - 8m, over 24m)***

Participating in the study with partners was reported by PNEs to provide support in addition to affecting positive change to feeding practices within their own families.

***"I think that was very helpful to go as a couple.....and also I guess opened up the communication between us in regards to our kids' food"*** ***Father of 3 (aged 0 - 6 m, 16 - 18 m, 2 years)***

Some PNEs reported that support through ongoing contact with other study participants would have been helpful. Despite having access to each other's email and the Facebook site, there was minimal contact between PNEs during the intervention, indicating this was not necessary or a less preferred means of support.

***"So you get a bit of information, you start sharing that, you come back together two months later and you go well this has worked and this hasn't. We want more information about this and then you get a bit more there.... it just might have been good to have a little bit more face- to- face in that time"*** ***Mother of 2 (aged both over 24m)***

## 5.3 Support from researchers

Peer Nutrition Educators reported feeling supported by the research team and being a part of the study. The research team was available to be contacted throughout the intervention period to assist the sharing process, discuss approaches and provide additional information specific to recipient's needs. PNEs contacted the research team on 23 occasions over the intervention period to provide information, to share and to request assistance or resources for a nutrition or child feeding issue. It was evident that the availability of support was adequate for PNEs, as the volume of support requested was much less than expected by the researchers, but considered appropriate or generous by PNEs.

***"I did often say to them, look if you're unsure or can't find what you're looking for, just let me know, I can pass it on get them to contact you or something like that. They were all fairly open to that. They were open to if they needed to, using that avenue"*** ***Mother of 1 (aged 9 - 11m)***

# Discussion

The effectiveness of peer education as a means of disseminating nutrition and child feeding information between parents of babies and young children is demonstrated by the extent of information sharing and positive experiences of PNEs. This study provides new evidence of increased capacity for information sharing via social media and a high level of acceptability of peer nutrition education from recipients. The high retention rate of 82% amongst time-poor new parents is indicative of strong engagement, and compares favourably with previous peer nutrition educator programs<sup>37, 38, 43, 44</sup>.

## The model

The peer education model that was employed allowed for flexibility in the nature and content of materials and mediums in response to input from the PNEs. The social media component was effective in providing additional support and a FFKMNC presence for PNEs with regular reminders on PNEs Facebook newsfeeds. The bulk of the literature on peer nutrition education describes models where information is delivered in more formal settings such as groups, classes, home visits and programs rather than utilising the social structures and communication mediums already in use by parents<sup>35-44</sup>. The flexibility and responsiveness was considered by PNEs to be effective because it enabled dissemination of more information about topics than was considered to be needed. It also contributed to the sense of support that was reported as a vital dimension to successful implementation of the PNE role.



Investment of time in training and ongoing contact with peer educators has been found to be a determinant in successful peer education programs<sup>43, 44</sup>. This model was much less resource intensive than previous peer educator interventions<sup>35-44</sup> with contact time limited to a two hour workshop and two follow up calls. This was reflective of the time commitment parents were willing and expected to contribute<sup>10</sup> and seemed to be compensated by the perception of support reported by PNEs. It is possible that the daily prompts by way of Facebook posts was perceived by PNEs as support in their role as information sharers.

The model proved to be mutually beneficial for both researchers and parents. Those PNEs who were passionate about nutrition and their children's health were able to pass on credible evidence based information and the research team were able to infiltrate parents' inner circle, an area difficult to access with correct information. As with most peer educator models<sup>35-44</sup> that target a health issue, this study was reliant on parents' strong sense of responsibility<sup>8</sup> to feed their children well, for study engagement. Unlike previously described studies<sup>42, 44</sup> this study was particularly reliant on personal commitment as PNEs did not receive reimbursement or incentives to be involved.

## The mediums

The Facebook page Food For Kids Mid North Coast was created as a vehicle for PNEs to share information with friends and family. The reach of the page far exceeded expectations, and showed a much larger distribution of information than PNEs reported. The proliferation of smart phones and the internet has drastically increased the convenience of accessing health information, an important consideration when trying to access time-poor new parents<sup>42</sup>. It was therefore understandable that PNEs using Facebook shared on more occasions and with more recipients than non-Facebook users. The use of Facebook to discretely share messages that would have been uncomfortable to discuss face-to-face is consistent with previously reported advantages of online information sharing<sup>34</sup>. However, the more generic nature of Facebook posts were considered by PNEs as less likely to reach, engage and affect change to feeding behaviours of the specific people they hoped to reach, when compared to more direct or tailored approaches.

Considering the large volume of FFKMNC page followers there was less than expected discussion regarding feeding issues, tips and solutions on the page. Peer Nutrition Educators predominantly shared more information from the research team than they shared themselves on the page. Parents consider child feeding to be a subject with which they should be already confident with, even though it is considered to be challenging<sup>48</sup>. This could present a barrier to discussion and enquiry that potentially exposes parent's lack of confidence in child feeding, particularly in a forum where the identity and the scale of the audience is uncertain<sup>49</sup>.

Olsen et al (2005) describes ample dosage of the message to be an enabler for change<sup>50</sup>. Those PNEs who didn't access Facebook may not have received a sufficient dose of intervention to affect feeding change for themselves and their peers, particularly if they didn't access the print resources or emails. Increased promotion of the advantages of using social media as an educational medium (as opposed to possible perception of sharing trivia) at the initial workshop or alternative communication methods may need to be considered in future programs.

Parents have been found to be more likely to change their diet related behaviours if educators share similar demographics and similar nutritional concerns<sup>12</sup>. Sharing information verbally allowed PNEs to fully capitalise on their peer relationship advantage as information could be tailored, taking into consideration the recipient's needs<sup>42</sup>. The limitation of peer education messages being diluted<sup>10</sup> and misconstrued when delivered verbally was overcome when messages were reinforced through Facebook or other written formats, keeping the message integrity intact.

The PNEs expressed a strong preference for an online repository of resources that can be accessed on demand rather than the provision of print and email resources. This finding is consistent with literature outlining the limited value parents place in print resources alone<sup>51</sup>.



## The messages

Trust in social media sites and content is well documented as an enabler for their effective application as a health information source<sup>9, 10, 32</sup>. The FFKMNC Facebook page achieved this by balancing dependable evidence based information and less informative populist posts<sup>8</sup>. Attaining such balance is a precarious challenge for health information sites due to the competition for credibility with non-evidence based alternative information.

While consistent with previous studies<sup>11, 25, 26</sup> the strength of the finding about reported uptake of child feeding practices information and their novelty and popularity amongst both PNEs parents and family was surprising. Duncanson et al (2013) found that parents have intentions to feed their children well but are often unable to convert their intention into practice<sup>11</sup>. It is understandable that child feeding practices information was well received as it offered parents alternative feeding strategies when others had been exhausted, providing hope that nutrition guidelines could subsequently be achieved. Additionally, the prospect of the strategy benefitting parents as well as children appeared to serve as an incentive to parents to try new child feeding strategies, especially when these were being recommended by peers who reported success in their implementation. This finding opens up an opportunity for health promotion services to expand or redirect the focus of nutrition interventions targeting parents of toddlers and young children from purely nutrition and dietary intake towards child feeding practices.

Parents' lack of familiarity with the appropriate portion sizes for children is consistent with previously published literature<sup>52</sup>, therefore the popularity of the AGTHE resources (which include portion size information) with PNEs and recipients is unsurprising. This flags portion size awareness as an important consideration for future interventions aimed at changing young children's dietary intake. It also serves as a prompt to government agencies that the Australian Dietary Guidelines food based recommendations (AGTHE) for children are not reaching their intended audience. In contrast to previous research with new parent target groups<sup>32</sup>, resources about cost and time saving strategies related to child feeding were the least utilised and appeared to be less of a priority for this study demographic.

## The people

Despite the use of purposive sampling to increase the chance of recruiting a higher representation of rural residing, lower socio-economic and indigenous participants, the majority of the study cohort were female, non-indigenous and tertiary educated. Reaching vulnerable groups has been reported as difficult in other peer educator projects<sup>37</sup>. The mean parenting efficacy score of PNEs is highly consistent with scores for women from the Longitudinal Study of Australian Children<sup>53</sup>, a representative sample of Australian parents with children aged two to three years.

Parent groups that met regularly were the setting for a substantial proportion of information sharing. The groups which comprised newer parents or younger children involved more discussion about feeding and parenting in general<sup>54</sup>. Parents have previously reported a high degree of anxiety about the appropriateness of their parenting practices in relation to their children's current and future health<sup>25</sup>. New parents may be motivated to learn how to feed their children appropriately if they have received minimal feeding information previously. Newer parents may also be less guarded about asking questions and more willing to reveal themselves as novices in both feeding and parenting.

Parents with older children are more likely to have established child feeding practices<sup>54</sup> and were concerned with more current parenting challenges. Fear of being labelled a 'bad parent' has been identified as a barrier to parents engaging in behavioural change<sup>55</sup>. This may explain a reluctance to engage in the sharing process by some parents of older children, as acknowledging a need for information may be perceived as an admission of flaws in parenting<sup>48</sup>. Alternately, parents may have developed entrenched ideas about barriers to improving child feeding and dietary intake that become progressively harder to change.

Feeling supported had a direct effect on PNEs confidence to share information. The “critical mass” of support from PNEs, family, partners and peers was described as a powerful enabler. Peers were able to show their support by engaging and adopting PNEs recommendations. Teamwork and mentoring amongst peer educators has been identified by Hibbs et al (2011)<sup>56</sup> as a key area to strengthen programs.

Peer Nutrition Educators entering the study generally had high parenting confidence/efficacy but not necessarily high child feeding efficacy. Self-efficacy and reported confidence in feeding improved throughout the study providing motivation to share information. The dynamic between the PNE and recipient of information in terms of sharing child feeding information depended on the child feeding confidence and efficacy of the PNE relative to the attitudes and beliefs of the recipient. The combination of low PNE child feeding efficacy and strong child feeding/nutrition attitudes and beliefs of recipients resulted in perceived difficulty in sharing of information. The use of Facebook as a sharing medium was effective for PNEs to overcome this barrier.

The type of responses that PNEs received from sharing information with recipients appeared to be dealt with differently depending on the relationship type. If shared information was received negatively by peers it was reported more likely to affect ongoing sharing than if the negative response was from family. The risk of the more tenuous peer relationship<sup>58</sup> being adversely affected was generally considered too great, whereas negative responses from family were more likely to be challenged by PNEs.

The inappropriate feeding practices of extended family and in particular grandparents is concerning as they can have a strong influence on the dietary intake of infants and young children<sup>23</sup>. Grandparents play a significant direct caring role for 30 per cent of Australian children with two working parents<sup>22</sup>. Solutions to address the need for improved child feeding practices of grandparents were not found in this study. It is possible that peer support for grandparents needs to come from PNEs outside of the family to be effective, or to train some grandparents as PNEs.

Peer educators were surprised that inappropriate feeding practices and child dietary intake were not related to socio-economic status. This differs from previous research which identifies socio-economic factors such as education level as predictive of child dietary intake<sup>57</sup>. An interesting observation raised by PNEs was that some parents looked after their own physical activity and nutrition, but this did not reflect in child feeding, a finding consistent with St John Alderson et al (1999)<sup>58</sup>. A possible explanation is parents lack of awareness of the importance of early nutrition in determining children’s lifelong eating patterns<sup>59</sup>, although it is more likely to reflect the difficulties parents have implementing healthy eating practices with their children or that they compare their children’s dietary intake to social norms rather than dietary guidelines<sup>11</sup>.

## Strengths

To the author’s knowledge, this is the first study that targets new parents and the development of eating patterns while capitalising on the social structures existing in this demographic group. With health services looking for evidence based programs that offer value for money this study offers great potential impact for little investment. This research provides an option to fill a gap in service provision and extend outside the current settings based approaches. The researchers professional background, life stage and immersion in the studied community allowed strong relationship development and allowed for greater insight into the issues and understanding of the issues within the social context of new parents.

## Limitations

The generalisability of the study findings are limited by the demographic of the study participants being predominantly rurally located and tertiary educated females. Given the research question relates to child nutrition, dietary intake and feeding it was expected that the study sample would be predominantly female, and purposive sampling was used to attempt to access vulnerable groups. It is possible that the familiarity of the researcher with the research cohort and presence at the group interviews may have impacted some responses, although participants were adamant that this was not the case.



Quantifying the exact amount of sharing activity was difficult considering the loose nature of what constitutes an “occasion of information sharing” especially when a large proportion of sharing was woven into more general discussion. The collection of this data was done in retrospect and may have been under reported due to low recall. The discrepancy between reported Facebook shares and actual shares is likely to be a combination of low recall and lack of awareness of on-sharing when PNEs estimated sharing occasions.

Survey information collected on the topics shared within the intervention period relied on PNEs recognising these topics by terminology used in the PNE workshop, Facebook posts and email. It is possible that PNE and researcher interpretation of the terminology related to child feeding practices (Appendix 4) may have differed and resulted in the sharing of specific child feeding practice information being under-reported.

Although changes to child feeding practices and child dietary intake were studied and reported qualitatively, these were not measured quantitatively in this study. The intention of the study was to determine the feasibility of the peer nutrition education model, rather than dietary intake outcomes, hence a qualitative approach was used to measure the feasibility. Furthermore, child dietary intake changes so rapidly in this early life stage and is influenced by confounding factors that would have made it impossible to attribute dietary change to the intervention.

## Conclusion

Peer education with a social media component provides an avenue to distribute evidence-based nutrition and child feeding information much more widely than conventional interventions with less investment of resources.

This study served a dual purpose; engaged parents gained access to reliable information, and health professionals infiltrated the hard to reach new parents’ inner circle with evidence based information. The high retention rate (82%) of this study demonstrated the acceptability of flexible model and minimal time commitment. This outcome suggests it is possible to engage and retain PNEs if they feel adequately supported, even if the training and support required by researchers is not high.

Facebook was established as an effective and trusted medium for health professionals to share information with parents. This preference for social media over print and email emphasised a need to reconsider traditional ways of communicating health messages and for Local Health Districts to re-evaluate social media policies.

The popularity and successful implementation of the child feeding practices was demonstrated by parents and PNEs. The unfamiliarity of parents’ with recommended feeding practices and the important role they play in assisting feeding intention highlight a need for child feeding practices to be the focus of future programs.

The FFKMNC study identified the requirement for interventions to target parents earlier within the parenting cycle before feeding practices have been consolidated. Family and in particular older family were identified as having an important role on influencing dietary patterns of young children.

This study reflected the literature in being unsuccessful in engaging marginalised parents. Additional recruitment strategies may be required to engage this group. Inappropriate feeding practices were shown to transcend demographics, highlighting the need for interventions across all demographic groups.

The results of this study indicate it is both possible and feasible for a peer nutrition education model to be embraced as a cost and resource effective means of addressing diet quality and food behaviour of babies and young children in rural settings. To address the impending chronic disease consequences of poor child nutrition, an investment in the development of this peer nutrition education model is warranted.

## Recommendations

- This study should be extended throughout rural New South Wales to access more rural parents. Evaluation of the reach and scope of the model over an extended intervention period and geographic area, allowing time for sustainable changes in child feeding and parenting approaches is recommended.
- Future peer education models should to be run in partnership with child and family health teams who have access to parents at an early stage of the parenting cycle, or even in the antenatal setting.
- A more strategic and sophisticated social media strategy for peer education models which involves the inclusion of platforms such as Twitter, Google Plus, Pinterest and Instagram should be employed to further increase reach. This would allow for topic specific resources and discussion to be accessed on demand.
- Further investigation should be conducted into the perspective of the recipients of information from PNEs. Measurement of the effect on their behavioural intention, actual behaviour and changes to their children's diet quality would make a valuable contribution to this field of research.
- Further research is required to investigate more effective strategies to target extended family and in particular older family members, in order for them to positively influence feeding practices.
- Future programs aimed at improving infant and child nutrition should include a higher proportion of content relating to child feeding practices. Further development of creative, innovative and appealing child feeding practices messages will help parents put the principles of child nutrition into practice.

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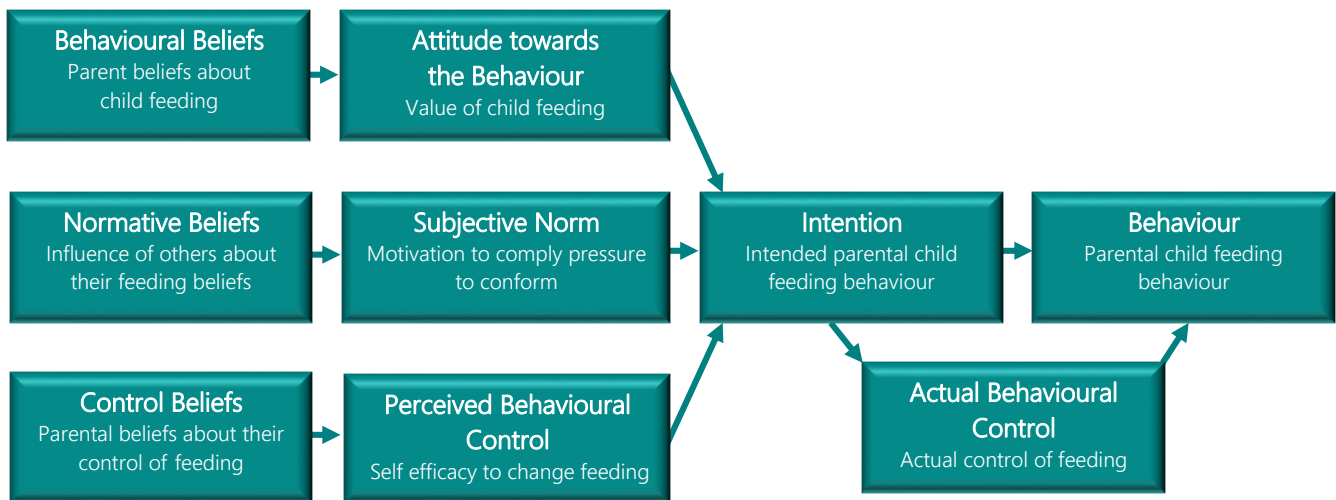




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# Appendices

## Appendix 1: Theory of Planned Behaviour in a child feeding context.<sup>11</sup>



### Participant information statement

You are invited to participate in the study “The effectiveness of peer education in disseminating nutrition and child feeding information amongst new parents.”

#### About the Study

This study is to see if peer education in nutrition and child feeding is an effective way to inform new parents about healthy food for their babies and infants. We want to find out if new parents find it useful to receive information in this way, how the experience is for the parents who are the peer educators and which resources and information are most helpful in helping new parents feeding their children. You will receive training and information about nutrition and child feeding and pass it on to your friends over a six month period. This may help develop a way nutrition and child feeding information can be shared between parents in the future.

This study is being carried out by:

#### PRINCIPAL INVESTIGATOR

Richard Ball - Health Promotion  
Officer/Dietitian  
Bachelor of Science (Nutrition)  
Master of Nutrition and Dietetics  
Accredited Practicing Dietitian  
02 6588 2933/0477 324 946  
Port Macquarie Community Health  
Richard.Ball@ncahs.health.nsw.gov.au

#### ASSOCIATE INVESTIGATOR

Kerith Duncanson - Accredited Practicing  
Dietitian  
117 Becker Road, Forster NSW 2428  
kerith@helpyourself.com.au

#### What you will be required to do

This study will involve you being a nutrition peer educator. You will attend a three hour workshop to learn about the study, nutrition and child feeding, and be given information to take and share with other parents over six months. Extra information on nutrition and child feeding will be sent to you throughout the 6 month period. You will be required to take brief notes of the information given out and activity related to your role as a nutrition peer educator over this time. You will receive two phone calls over the six month period to see how you are going and if you need any extra information.

At the beginning of the study you will be required to fill out a questionnaire and at the end of the six month period you will be required to attend a one hour focus group so we can find out what happened in your role as a nutrition peer educator. These focus groups will be audio taped. Workshops and focus groups will be run at St Joseph's Preschool & Long Day Care Port Macquarie, Wauchope Preschool Kindergarten and Kempsey Children Services. Transport, childcare and refreshments will be available at both the meetings and the focus groups.

#### Other Information

This study is completely voluntary. You do not have to participate in this study and you can withdraw at any time. If you do attend a focus group at the end of the study and then decide to leave the study, please be aware that your responses will still be included in the study. All parts of the study, including questionnaires, notes collected from you or taken from our conversations and recording of focus groups will only be seen by the research team. A report of the study may be written and sent to be published, but you will not be able to be identified in this report. You can tell other people that you are involved in the study.

There are no payments or other financial benefits by joining this study although you will have access to the best nutrition and child feeding information and an Accredited Practicing Dietitian for the benefit of yourselves, family and friends.

If you would like to participate in the study after reading this statement and returning the consent form, Richard Ball (Principal Investigator) will discuss it with you further and answer any questions you may have. If you would like to ask any questions before agreeing to be in the study please feel free to contact:

Richard Ball  
Health Promotion Officer/Dietitian  
Mid North Coast Local Health District  
Port Macquarie Community Health  
PO Box 126, Port Macquarie 2444 NSW  
02 6588 2933/0467 003 875  
[Richard.Ball@ncahs.health.nsw.gov.au](mailto:Richard.Ball@ncahs.health.nsw.gov.au)

Any person with concerns or complaints about the conduct of this research study can contact:

The Manager, Human Ethics  
Ms Janine Holston – Research Ethics Officer  
NCNSW Human Research Ethics Committee  
MURWILLUMBAH NSW 2484  
Ph: 02 6672 0269 / 0421028924  
Email: [Janine.Holston@ncahs.health.nsw.gov.au](mailto:Janine.Holston@ncahs.health.nsw.gov.au)



## CONSENT FORM



### Principal Investigator

Richard Ball (Health Promotion Officer)  
Accredited Practicing Dietitian  
Mid North Coast Local Health District  
Port Macquarie Community Health  
Work - 02 6588 2933 Mob – 0467 003 875  
PO Box 126, Port Macquarie 2444 NSW

### Associate Investigator

Kerith Duncanson - Accredited Practicing Dietitian  
117 Becker Road, Forster NSW 2428  
kerith@helpyourself.com.au

### The effectiveness of peer education in disseminating nutrition and child feeding information amongst new parents.

1. I, ....., give consent to be involved in the research project titled "The effectiveness of peer education in disseminating nutrition and child feeding information amongst new parents".
2. I have read the Information Statement or had it fully explained to me by the principal investigator, childcare centre director, child or family health nurse or research worker to my satisfaction. I acknowledge and understand what the project is about, how it will effect me and my consent is given voluntarily.
3. I acknowledge that my participation will include attending a peer educator workshop, collecting information on nutrition and child feeding related activity for six months and participating in a focus group.
4. I have been given the opportunity to have someone present while the project is explained to me.
5. I understand that participation is voluntary, and I am free to withdraw from the project at any stage.

Signed..... (Participant) this day ...../...../.....

Phone Number \_\_\_\_\_

I ..... (Witness) believe in my opinion that the participant understands the nature of the study and the commitment required.

Signed..... this day ...../...../.....

Signed..... (Principal Investigator) this day ...../...../.....

*Once you and a witness have signed and completed this form please return it to your Childcare Centre Office, Playgroup worker or to-*

Richard Ball (Health Promotion Officer)  
Mid North Coast Local Health District  
Port Macquarie Community Health  
PO Box 126, Port Macquarie 2444 NSW

You will receive a phone call shortly to discuss the study further.

This study has been cleared by the North Coast ethics committee in accordance with the National Health and Medical Research Council's guidelines. You are of course, free to discuss your participation in this study with project staff (contactable on 0477 324 946). If you would like to speak to a NSW Health Officer not involved in the study please call Ms Janine Holston – Research Ethics Officer Ph: 02 6672 0269 / 0421028924





## Appendix 4: Peer Nutrition Educator workshop content

Background	Project background/context Theory behind study Project time line Children's health data Children's nutrition intake data Children's food environment
Nutrition and child feeding education	Evidence and non – evidence based science Starting solids AGTHE Healthy food behaviour Child feeding practices <ul style="list-style-type: none"><li>• Responsibility</li><li>• Monitoring</li><li>• Restriction</li><li>• Rewarding Environment</li><li>• Pressure to eat</li><li>• Role Modelling</li><li>• Exposure</li></ul> Picky v problem eaters
Participants role in the project	Sharing Information Logging an occasion of sharing Mediums to be used Risk management
Administration	Resource folders Project boundaries Referral pathways Complaint procedure

## Appendix 5: Print resource folder content distributed at Peer Nutrition Educator workshop

- AGTHE for children (0-8 years)
- Managing food refusal
- Managing faddy eating
- Why toddlers refuse food: additional factors
- Suitable milks for cow's milk allergy/intolerance
- Managing short terms constipation
- Recipes for baby 9-12 months
- Salt in you toddlers diet
- Foods high in fat and sugar
- Finger foods for babies 6 -12 months
- Food safety in children older than 1 year
- Understanding food labels
- Healthy eating for toddlers guidance and tips for parents
- Combing food for balanced diet
- Iron fortified infant cereal information
- Iron-fortified infant cereal recipes - Finger foods for babies and toddlers
- Starting solids
- Key contact details
- Dietitian contact details
- Recipes for your baby (6-9 Months Old)
- Recipes for your baby (9-12 Months Old)
- Healthy eating guidelines for your vegetarian toddler (1 to 3 years old)
- Feeding a healthy toddler (12 to 36 months old)
- Giving baby best start
- My responsibilities card (division of responsibility)
- Useful websites list
- Information on allergies
- Healthy food fast recipe book
- Feeding your picky toddler or pre-schooler

## Appendix 6: Food For Kids Mid North Coast Facebook page



## Appendix 7: Glossary of Facebook terms

Facebook term	Definition
Newsfeed	The page and sequence of posts that are seen when Facebook users access their home page.
Like	A like button can be seen by users next to most Facebook content. Users can express that they like, enjoy or support certain content by clicking this button. Users can like content such as status updates, comments, photos, links shared by friends, and advertisements. The number of users who liked particular content is on display. When the user likes content their friends will see this on their newsfeed therefore increasing the contents reach.
Page follower	When a Facebook user likes a page they become a page follower with content from the page appearing on their newsfeed.
Friend	Users can be invited or invite others to be a Facebook friend. Friends will then have access to all their friends' pages and be able to see post content their friend engage with.
Post	Facebook users can post information on a page. This can be in the form of text, media or a link.
Reach	Reach is the number of Facebook users newsfeeds that a post has been made visible.
Share	A share button is available next to posts which allows users to share the information with their Facebook friends. This can be done to all or specifically chosen friends. These friends and their friends will be able to see the post on their newsfeed.
Tag	Facebook users able to "tag" or associate their friends with particular posts by placing their name in the comments section of a post. This makes the post visible to the user, the user's friends and other who have engaged with the post.
Insights	A performance indicator page on Facebook that can be viewed by page administrators. Page posts performance and trends can be accessed on this page.
Comment	A box is available for users to write text and comment on post content.

## Appendix 8: Categories of priority information posts on the Facebook page: Food For Kids Mid North Coast

Recipes/Food Ideas	Participant Contribution	Child Feeding Practices	General Nutrition
Recipes; Budgeting; Time saving ideas; Food art; Sustainability; Lunchbox foods; Novelty ideas	Stories; Successes; Solutions; Problems/Barriers Questions	Role Modeling; Rewarding; Exposure; Restriction; Environment; Pressuring; Monitoring; Responsibility	Product information; Nutrition myth busting; Childhood nutrition; Introduction to solids; Discretionary foods; Food groups/core foods Topical nutrition & nutrient information



## Nutrition peer educator participant questionnaire

(Please note, any information will be de-identified outside the research team)



Name: \_\_\_\_\_

Phone: \_\_\_\_\_

Address: \_\_\_\_\_

Email: \_\_\_\_\_

**1 a) Gender (please tick correct box)**

☐ Male ☐ Female

**1 b) Age range:**

☐ 18-24 ☐ 25-34 ☐ 35-44 ☐ 45-55 ☐ over 55

**1 c) Number of children**

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ other \_\_\_\_\_

**1 d) Ages of all children**

- ☐ 6 - 8 months  
☐ 9 – 11 months  
☐ 12 – 15 months  
☐ 16 – 18 months  
☐ 19 – 21 months  
☐ 22 – 24 months  
☐ Over 24 months \_\_\_\_\_

**1 e) What language do you speak at home?**

\_\_\_\_\_

**1 f) Indigenous status**

- ☐ Not Aboriginal ☐ Yes, Aboriginal ☐ Yes, Torres Strait Islander  
☐ Yes, both Aboriginal and Torres Strait Islander

**1 g) Education**

- ☐ Year 12 or equivalent,  
☐ Year 10 or equivalent,  
☐ Trade/technical/vocational training  
☐ University degree. Discipline studied \_\_\_\_\_  
☐ Other

**1 h) Employment**

- ☐ Full time employed  
☐ Part time employed (hours per week) \_\_\_\_\_  
☐ Maternity leave: Date returning to work \_\_\_\_\_ (hours per week) \_\_\_\_\_  
☐ Not currently working

Last paid role \_\_\_\_\_

**2 a) Do you belong or attend a group with parents of children of a similar age to your youngest child (either formal or social)?**

- ☐ Yes ☐ No ☐ Attend more than 1 group

**2 b) How was the parents group set up?**

- ☐ Prenatal groups ☐ Antenatal groups ☐ Friends ☐ Social media sites ☐ Other \_\_\_\_\_

\_\_\_\_\_



**2 c) How many people regularly attend your parents group?**

☐ 0-5                      ☐ 5-10                      ☐ 10 -20                      ☐ Other \_\_\_\_\_

**2 d) How often does your parents group meet?**

☐ Once a week    ☐ Twice a week    ☐ Every 2 weeks    ☐ Monthly    ☐ Other \_\_\_\_\_

**2 e) How do parents within the groups usually communicate between each other?**

☐ Phone                      ☐ Text                      ☐ Email                      ☐ Social media    ☐ Other \_\_\_\_\_

**2 f) Are you involved in an online group (s) for new parents with no face to face meetings?**

☐ Yes                      ☐ No

**3 a) Where do you find answers to questions you have about child feeding and nutrition?**

\_\_\_\_\_

**3 b) Please describe if and how you keep check or limit the foods your children have?**

e.g. "I keep junk food out of view and reach of my children" or "I make sure they eat all their vegetables in the evening"

\_\_\_\_\_  
\_\_\_\_\_

**3 c) What are the changes you want to make to your child's eating habits?**

\_\_\_\_\_  
\_\_\_\_\_

**3 d) How would you compare your children's diet (eating) with the eating habits of your friends' children within your social network?**

\_\_\_\_\_  
\_\_\_\_\_

**3 e) Which aspects of child feeding do you find frustrating?**

\_\_\_\_\_  
\_\_\_\_\_

**3 f) What do you think are the main influences on what your children want to eat?**

\_\_\_\_\_  
\_\_\_\_\_

**3 g) What were your reasons for joining the study?**

\_\_\_\_\_  
\_\_\_\_\_

**3 h) Are you familiar with the Australian Dietary Guidelines?**

☐ Yes                      ☐ No

*Thank you for completing the survey!*



## Appendix 10: Sharing, reach and number of occasions, parenting and child feeding confidence questionnaire



Name \_\_\_\_\_

Thank you for completing this questionnaire. Please use information collected in your research activity logs to assist your answers. The research period refers to the six month period between the first workshop and now.

1. On how many occasions during the research period did you share nutrition and child feeding information with your friends or family?

- |                                  |                                  |
|----------------------------------|----------------------------------|
| <input type="checkbox"/> 0 - 5   | <input type="checkbox"/> 35 - 40 |
| <input type="checkbox"/> 5 - 10  | <input type="checkbox"/> 40 - 45 |
| <input type="checkbox"/> 10 - 15 | <input type="checkbox"/> 45 - 50 |
| <input type="checkbox"/> 15 - 20 | <input type="checkbox"/> Over 50 |
| <input type="checkbox"/> 20 - 25 | Other _____                      |
| <input type="checkbox"/> 25 - 30 |                                  |
| <input type="checkbox"/> 30 - 35 |                                  |

2. How frequently during the research period did you share nutrition and child feeding information?

- ☐ Daily  
☐ 2 - 3 x per week  
☐ Weekly  
☐ Monthly  
☐ Other \_\_\_\_\_

3. How many people received at least 1 piece of nutrition and child feeding from yourself during the research period?

- |                                  |                                  |
|----------------------------------|----------------------------------|
| <input type="checkbox"/> 0 - 5   | <input type="checkbox"/> 30 - 35 |
| <input type="checkbox"/> 5 - 10  | <input type="checkbox"/> 35 - 40 |
| <input type="checkbox"/> 10 - 15 | <input type="checkbox"/> 40 - 45 |
| <input type="checkbox"/> 15 - 20 | <input type="checkbox"/> 45 - 50 |
| <input type="checkbox"/> 20 - 25 | <input type="checkbox"/> Over 50 |
| <input type="checkbox"/> 25 - 30 | Other _____                      |

4. Please tick the nutrition and child feeding topics you shared during the research period. Please circle the topic you shared most.

- |  |  |
|--|--|
| <input type="checkbox"/> Recipes                       | <input type="checkbox"/> Pressuring  |
| <input type="checkbox"/> Budget ideas                  | <input type="checkbox"/> Monitoring  |
| <input type="checkbox"/> Time saving ideas             | <input type="checkbox"/> Responsibility  |
| <input type="checkbox"/> Sustainability/Environment    | <input type="checkbox"/> Product information   |
| <input type="checkbox"/> Lunchboxes                    | <input type="checkbox"/> Myth busting  |
| <input type="checkbox"/> Novelty Food/Art              | <input type="checkbox"/> Childhood Nutrition   |
| <input type="checkbox"/> Role Modelling healthy Eating | <input type="checkbox"/> Starting solids   |
| <input type="checkbox"/> Rewarding with food           | <input type="checkbox"/> Food groups   |
| <input type="checkbox"/> Exposure to new foods         | <input type="checkbox"/> Unhealthy foods   |
| <input type="checkbox"/> Restriction of foods          | <input type="checkbox"/> Information on specific nutrients such as calcium and iron. |
| <input type="checkbox"/> Environment                   |  |



5. Which formats did you use to share information during the research period? If more than one please number the method used most as 1, second most as 2 and so on.

- |                                 |                                       |
|---------------------------------|---------------------------------------|
| <input type="checkbox"/> Verbal | <input type="checkbox"/> Social media |
| <input type="checkbox"/> Print  | <input type="checkbox"/> Other _____  |
| <input type="checkbox"/> Email  |                                       |

6. Overall as a parent do you feel that you are...?

- ☐ A very good parent
- ☐ A better than average parent
- ☐ An average parent
- ☐ A person who has some trouble with being a parent
- ☐ Not very good at being a parent

7. Before the research study period how would you rate your ability in child feeding?

- ☐ Very good/confident
- ☐ Better than average
- ☐ Average
- ☐ I have some trouble with child feeding
- ☐ I have a lot of trouble feeding my child

8. After the research study period how would you rate your ability in child feeding?

- ☐ Very good/confident
- ☐ Better than average
- ☐ Average
- ☐ I have some trouble with child feeding
- ☐ I have a lot of trouble feeding my child

**Thank You**

## Appendix 11: Group and individual interview questions

### *Opening question (round robin)*

How would you describe the experience of being a nutrition peer educator? Add one comment each.

### *Exploration Questions*

#### Appropriateness

Our goal was to provide information that was easy to share, topical and well received, while also being evidence based.

- How well (or not) was the information we provided pitched for your peers?
- Can you think of any examples of topics or ideas that were more or less suitable/easy to share?

#### Attitudes and beliefs

- How do you think the information was received by your peers? Were there any factors that made sharing information easier or harder?
- What were some of the attitudes of other parents towards receiving nutrition education? Did you notice any strong dietary beliefs come through?
- Did you notice any instances where you felt people did not ask you questions because they were embarrassed?

#### Outcomes / results / logistics

I suppose we also want to hear and good (or bad) news stories about what happened as a result of sharing nutrition information with your peers.

- We have asked about your experience, so this time can you think about the impacts of the information on the parents you shared with or their children?
- Did you notice any changes as a result of information you shared or due to you being a part of the project?
- Is six months a good amount of time – should this be ongoing?
- What was timing of this project like in relation to age of your child?

### *Exit Questions*

- Is there anything else you would like to add that you feel we have not covered?

## Appendix 12: Demographic information of Food for Kids Mid North Coast Facebook page followers (n=519)

Gender		Age		Location	
Male	31 (6%)	18-24	62 (12%)	MNCLHD Area	244 (47%)
Female	482 (93%)	25-34	249 (48%)	Greater MNC Area	32 (6%)
		35-44	156 (30%)	Other Australia	229 (44%)
		45+	20 (4%)	Outside Australia	14 (3%)
		Unknown	32 (6%)		

MNCLHD = Mid North Coast Local Health District

MNC = Mid North Coast

## Appendix 13: Peer Nutrition Educator reported occasions of sharing and number of recipients reached (n=28)

Sharing occasions	No. of participants	No. reached	No. of participants
0-5	4	0-5	5
5-10	3	5-10	4
10-15	6	10-15	6
15-20	3	15-20	2
20-25	2	20-25	1
25-30	4	25-30	2
30-35	0	30-35	0
35-40	3	35-40	0
40-45	0	40-45	0
45-50	0	45-50	1
Over 50	3	Over 50	5

No. = number of

## Appendix 14: Associations between Peer Nutrition Educator (n = 28\*) demographic and study variables and amount and reach of nutrition information sharing

	Low shares (0 - 20)	High shares (21 +)	P(sig)	Low reach (0 - 20)	High reach (21+)	P(sig)
No. of children						
- One	4 (14%)	5 (18%)	0.29	5 (18%)	4 (14%)	0.60
- More than one	12 (42%)	7 (25%)		10 (36%)	9 (32%)	
Age youngest child						
- 0 to 18 months	6 (21%)	5 (18%)	0.38	8 (29%)	3 (11%)	0.11
- Over 18 months	7 (25%)	10 (36%)		7 (25%)	10 (36%)	
Feeding conf. (pre)						
- Low to avg.	6 (22%)	9 (30%)	0.36	8 (29%)	7 (25%)	0.44
- Above avg. to good	7 (26%)	6 (22%)		7 (25%)	6 (21%)	
Change feeding conf.						
- no change	5 (21%)	2 (8%)	0.14	6 (21%)	1 (4%)	<b>0.03</b>
- increase	8 (33%)	13 (37%)		9 (32%)	12 (43%)	
Parenting conf.						
- Low to avg.	6 (21%)	5 (18%)	0.38	6 (21%)	5 (18%)	0.62
- Above avg.	7 (25%)	10 (36%)		9 (32%)	8 (29%)	
Facebook user (n = 27)						
- No	5 (19%)	11 (41%)	<b>0.04</b>	6 (22%)	10 (37%)	0.08
- Yes	8 (30%)	3 (11%)		8 (30%)	3 (11%)	
No. of mediums (n = 27)						
- 0 to 2	7 (26%)	9 (33%)	0.44	10 (37%)	6 (22%)	0.17
- 3 or more	6 (22%)	5 (19%)		4 (15%)	7 (26%)	
CF Topics Shared (n=25)						
- Low (0 – 3)	7 (28%)	5 (20%)	0.28	8 (32%)	4 (16%)	0.16
- High (3+)	5 (20%)	8 (32%)		5 (20%)	8 (32%)	
Topics Shared (n = 25)						
- Low (0-9)	10 (40%)	7 (28%)	0.2	13 (52%)	4 (16%)	<b>&lt;0.01</b>
- High (10 +)	2 (8%)	6 (24%)		0 (0%)	8 (32%)	
No. of shares (n = 28)						
- Low (0 - 20)				12 (43%)	3 (11%)	<b>0.03</b>
- High (21+)				5 (18%)	9 (32%)	

\* n = 28 unless stated in table  
CF = child feeding

No. = number of  
Conf. = confidence

P = significance level

avg. =average



## Appendix 15: Child feeding efficacy pre and post study and confidence in pre study parenting ability of Peer Nutrition Educators (n = 28)

	Parenting	Pre-study CF	Post-study CF	Change	P
Lots of trouble	0	0 (0)	0	0	
Trouble	0	8	1	-7	
Average	11	7	1	-6	
Better than average	11	10	15	5	
Very good	6	3	11	8	
Mean	3.78	3.29 (1.03)	4.29 (0.72)	1.0	<0.001

**P = significance level**

**CF = Child Feeding**

## Appendix 16: Associations between Facebook usage, number of mediums used in Food For Kids Mid North Coast study and demographic and study variables (n = 27)

	Facebook	Not on Facebook	P	No. mediums (0 to 2)	No. mediums (3 or more)	P
No. of children						
- One	6 (22%)	2 (7%)	0.26	4 (15%)	12 (44%)	0.41
- More than one	10 (37%)	9 (33%)		4 (15%)	7 (26%)	
Age youngest child						
- 0 to 18 m	6 (22%)	5 (19%)	0.49	7 (26%)	4 (15%)	0.51
- Over 18 m	10 (37%)	6 (22%)		9 (33%)	7 (26%)	
Feeding conf. (pre)						
- Low to avg.	7 (26%)	7 (26%)	0.27	12 (44%)	2 (7%)	<b>&lt;0.01</b>
- Above avg to good	9 (33%)	4 (15%)		4 (15%)	9 (33%)	
Parenting conf.						
- Low to avg.	5 (19%)	6 (22%)	0.21	6 (22%)	5 (19%)	0.49
- Above avg. to good	11 (41%)	5 (19%)		10 (37%)	6 (22%)	
Total topics shared						
- Low (0-9)	9 (37%)	8 (33%)	0.40	12 (48%)	5 (20%)	0.19
- High (10+)	6 (22%)	2 (7%)		3 (12%)	5 (20%)	

**No. = number of**

**P = significance level**

**avg. = average**

**Conf. = confidence**



## Appendix 17: Associations between number of child feeding topics, total topics and demographic and study variables (n=25)

	CF topics Low (0-3)	CF topics High (3+)	P	Total topics Low (0-9)	Total topics High (10 +)	P
Age youngest child						
- 0 to 18 months	5 (20%)	6 (24%)	0.67	8 (32%)	9 (36%)	1.00
- Over 18 months	7 (28%)	7 (28%)		3 (12%)	5 (20%)	
No. of children						
- One	5 (20%)	2 (8%)	0.26	6 (24%)	1 (4%)	0.36
- More than one	7 (28%)	11 (44%)		11 (44%)	7 (27%)	
Feeding conf.(pre)						
- Low to avg.	6 (24%)	8 (32%)	0.28	10 (40%)	4 (16%)	1.00
- Above avg. to good	6 (24%)	5 (20%)		7 (28%)	4 (16%)	
Parenting conf.						
- Low to avg.	4 (16%)	6 (24%)	0.51	8 (32%)	2 (8%)	0.40
- Above avg. to good	8 (32%)	7 (28%)		9 (36%)	6 (24%)	
Change CF conf.						
- no change	4 (16%)	2 (8%)	0.28	16 (64%)	7 (16%)	1.00
- increase	8 (32%)	11 (44%)		1 (4%)	1 (4%)	
CF = Child Feeding Conf. = confidence	No. = number of		P = significance level	avg. =average		