



Enhanced Information Package Given at Birth: Effects on Early Parenting Experiences and Use of Educational Resources and Community Services at Age 3 Months

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Abstract

Objectives To determine the effect of an enhanced information package, the Welcome to Parenthood® (W2P) Kit, given at birth on (a) early parenting experiences and (b) use of educational resources and community services. **Methods** Two-group, post-test only design, with parents (mothers and fathers) in comparison group ($n = 186$; received standard discharge information) recruited prior to intervention group ($n = 195$; received W2P Kit); most were Canadian-born and highly educated. Participants completed an investigator-designed, online or telephone survey at 3 months postpartum, which generated quantitative and qualitative data. The W2P Kit included evidence-based, educational resources about infant feeding, child development, and parenting skills that targeted mothers and fathers, information about community services for new parents, infant board book, and small gifts. **Results** At 3 months postpartum the intervention group was significantly more likely to be aware of, and to have used, the educational resources than the comparison group. The intervention group was also more likely to have made an unplanned visit to the doctor for their infant, but groups did not differ in early parenting experiences or use of community services. Parents who received the W2P Kit reported that it was helpful to learn about various aspects of child development and parenting. **Conclusions for Practice** Parents who received the W2P Kit reported increased awareness and use of educational resources, but participants in both groups reported similar experiences as a new parent and use of community services. An enhanced information package given at birth may be a useful health promotion strategy.

Keywords Mothers · Fathers · Postpartum · Parenting education · Intervention study

Significance

Mothers and fathers of newborns need access to evidence-based information to support early parenting. Effects of information packages given at birth are unknown. This study

evaluated an enhanced information package, the Welcome to Parenthood Kit, which included educational resources for mothers and fathers, an infant board book to encourage parent–infant interactions, and information about community services. At 3 months postpartum, parents who received the Kit reported increased awareness and use of educational resources compared to parents who received standard hospital discharge information only. An enhanced information package given to new parents at birth may be a useful health promotion strategy.

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Introduction

The transition to parenthood is a period of fundamental life change that leaves many parents feeling unprepared (Deave et al. 2008; Holden 2015). Expectant and new parents want reliable information about infant growth and development, general parenting, and practical aspects of infant care; yet

often feel that information provided in prenatal classes and during the birth hospitalization is inadequate (Deave et al. 2008; Ellberg et al. 2010; Johansson and Darj 2004; Svensson et al. 2006). Accessible, evidence-based information and resources are essential for parental health and well-being, and to support healthy child development. Yet, the benefits of education for parents of newborns remain unclear (Bryanton et al. 2013).

Early childhood is the most important developmental phase. Early experiences interact with the child's genetics to shape the neural circuitry of the developing brain, thereby setting the foundation for lifelong learning, behaviour, and health (Black et al. 2017; Center on the Developing Child at Harvard University 2016). Nurturing and responsive relationships with parents, characterized by contingent reciprocity (i.e., 'serve and return' interactions), are essential to the development of healthy brain architecture (Britto et al. 2017; National Scientific Council on the Developing Child 2015). Inconsistent and unresponsive relationships weaken the architecture of the developing brain and increase the chances of negative outcomes, which become progressively more difficult to mitigate beyond the early years (Britto et al. 2017; National Scientific Council on the Developing Child 2015; Shonkoff and Richter 2013). Thus, the early years present a window of opportunity to promote the parental knowledge and skills required for optimal early childhood development. Together with experiences in the parenting role (e.g., social support, positivity, confidence, and emotional health), knowledge and skills form the proximal environment for early childhood development. These characteristics are modifiable and may be evaluated as outcomes of prevention-focused, psycho-educational interventions to support parents of children (Benzies et al. 2013b). Although numerous studies have investigated expectant and new parents' information and support needs (e.g., Deave et al. 2008; Devolin et al. 2013; Ellberg et al. 2010; Johansson and Darj 2004; Svensson et al. 2006), evidence about contents, timing, and effects of information distributed in the early postpartum period is lacking. One such public health initiative, launched in 2001, is the First 5 California Kit for New Parents (First 5 California 2015). Containing information on a range of parenting, health, and child development topics in the form of books, pamphlets, and educational DVDs, the kit is a low-cost, effective educational resource that has been shown to improve parenting knowledge and promote positive parenting practices in diverse communities (Franke et al. 2011; Neuhauer et al. 2007). Given cultural and health care system differences, it is unclear whether a similar initiative would be effective in Canada. The purpose of this study was: (a) to design an enhanced information package for new parents, the Welcome to Parenthood® (W2P) Kit, and (b) to

evaluate its effect on early parenting experiences and utilization of educational resources and community services. The research questions were:

1. At 3 months postpartum, were there differences between the intervention and comparison groups in their early parenting experiences?
2. At 3 months postpartum, were there differences between groups in their awareness and utilization of educational resources and community services?
3. For parents who received the enhanced information package, (a) what items did they use, (b) what was most helpful, (c) what did they learn, and (d) what do parents do because of what they learned from the resources in the W2P Kit?

Methods

We conducted this study on the postpartum unit of a hospital in a large Western Canadian city, which had 5886 births in 2014. The hospital provided postpartum care at no cost to the family under Canada's publicly funded health care insurance system. We used a two-group, post-test only design with convenience sampling. See Fig. 1 for a sampling flow diagram. The mother or father with a singleton or twin birth were eligible if they were (a) 18 years of age or older, (b) able to understand English well enough to provide written, informed consent and complete a telephone interview, and (c) planning to live in the city up to 3 months postpartum to ensure study participants had access to similar local supports and resources. Parents were excluded if their infant was admitted to neonatal intensive care unit for greater than 48 h because they may have experienced additional stressors or had access to specialized supports. The University of Calgary Conjoint Health Research Ethics Board approved the study (REB ID 14-0424), which was conducted in accord with the 1964 Declaration of Helsinki.

Participants in the comparison group ($n = 186$) were recruited between June and September 2014, and received standard hospital discharge information related to infant feeding and physical recovery after birth according to a checklist that was retained on the mother's medical record. After a 2-week washout period, participants in the intervention group ($n = 195$) were recruited between September and December 2014, and received the W2P Kit.

Intervention

The W2P Kit was distributed to mothers and fathers of newborns during the birth hospitalization. See Table 1 for description of items. Through various sources (e.g., prenatal care providers, public health clinics), all expectant

Fig. 1 Sampling flow diagram

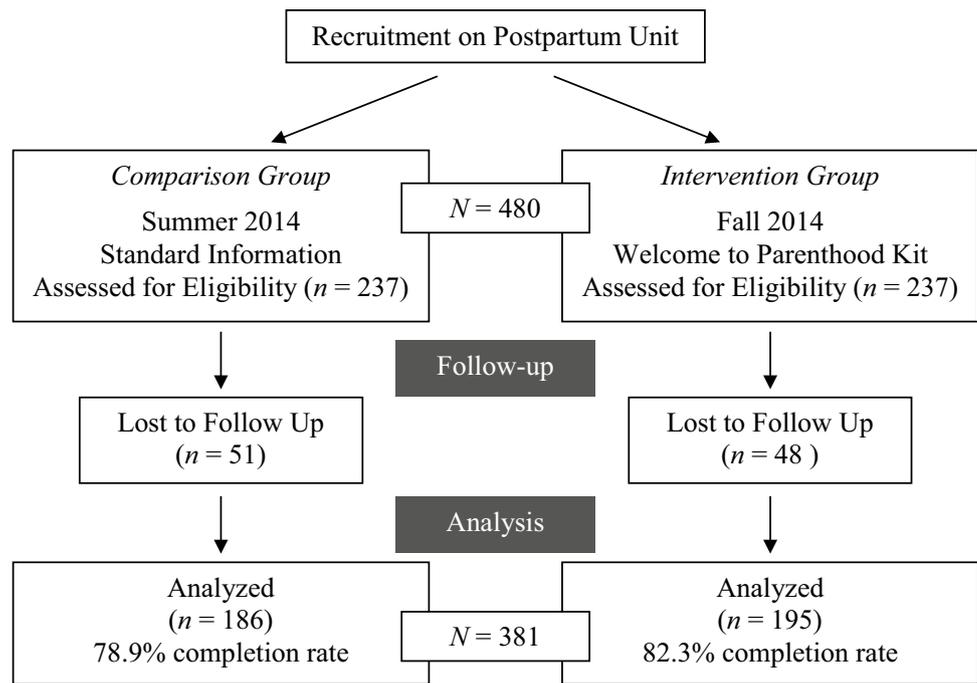


Table 1 Description of items in the Welcome to Parenthood® Kit

Item	Description
<i>Healthy Parents, Healthy Children</i> (Alberta Health Services 2013)	Two volumes of comprehensive, evidence-based information about pregnancy, parenting, and child care and development (from infancy to age six years), including information on the importance of early relationships; an online version is available The most salient information for new parents (infant feeding, newborn care, and postpartum care) were flagged with specially designed sticky notes
<i>Building Better Brains</i> card set (Alberta Family Wellness Initiative n.d.)	A set of three learning cards describing early brain development and practices that support healthy brain development
<i>The New Baby Manual for Dads: 24-h Cribside Assistance</i> (Alberta Father Involvement Initiative n.d.)	A brief guidebook designed for fathers; presents evidence-based information about infant care using a car repair metaphor
<i>Ten Little Fingers and Ten Little Toes</i> (Fox 2010)	A board book to promote parent–child interactions through reading
<i>Read, Sing, Talk, Play</i> (Calgary Reads)	Card to encourage parent–child interactions
The Help List	A dry-erase, sticky-backed, whiteboard with encouragement for parents to write down what they needed help with from visiting family and friends
Invitation to early parenting programs offered in the community	
Phone numbers for Alberta Health Link and the Early Start line	
Application for a children’s library card	
<i>New parent on board</i> car decal	
Onesie with the <i>Welcome to Parenthood®—let’s do this together</i> logo	

parents in Alberta had access to the *Healthy Parents, Healthy Children* (HPHC) books, the *Building Better Brains* card set, and *The New Baby Manual for Dads*. A key component of the intervention was that each item was removed from the W2P bag and its purpose was explained verbally to the parents.

Measurement

The outcomes for this study, early parenting experiences and utilization of educational resources and community services, were selected as proxy measures of the proximal environment for early child development. A survey was designed

specifically for this study by a committee of hospital patient care managers, public health nurses, and community stakeholders, including the United Way of Calgary and Area, Calgary Reads, and Calgary Public Library. The survey had four sections; see Table 2. The survey was pilot-tested by volunteers who were parents of infants, but not study participants. As a result of feedback, items were re-ordered to improve the logical flow of questions. The survey took between 15 and 20 min to complete, and generated quantitative and qualitative data. See Supplementary Materials file for survey.

Procedures

Following recruitment by a hospital volunteer or research assistant, interested participants provided written, informed consent, and socio-demographic and health information. Participants in the comparison group were recruited with a script describing the study and information about the 3-month follow-up survey. In addition to comparison group recruitment procedures, participants in the intervention group were presented with the W2P Kit. After removing items from the kit and describing them, the recruiter returned items to the bag, which was placed adjacent to the mother's suitcase to ensure it would be taken home. The participant who consented (mother or father) completed the outcome survey at 3 months postpartum, either online (48%)

or by telephone (52%). There were no differences in characteristics of participants or outcomes by survey format. Data were entered by the participant or research assistant directly into FluidSurveys, downloaded, and merged with baseline information collected at recruitment.

Data Analytic Strategy

Qualitative data from open-ended questions were analyzed thematically. Surveys with greater than 30% of missing values on the Parenting Experiences section were excluded from analyses. Descriptive statistics were computed to describe the sample. As the distribution of Parenting Experiences total score was skewed, the groups were compared using a Mann–Whitney U test. Differences in use of educational resources and community services between groups were analyzed using Pearson Chi square tests. Data were analyzed using SPSS version 22 with p set at .05.

Results

Participant characteristics by group are presented in Table 3. On average, intervention group parents were 32.52 ($SD=5.31$) years old, and comparison group parents were 31.75 ($SD=4.86$). A majority (70.9%) spoke English most

Table 2 Description of the investigator-designed survey

Survey section	Description
Parenting experiences (completed by all participants)	<ul style="list-style-type: none"> • Two open-ended questions asked parents to describe their greatest joys and worries related to bringing home a new baby • Five items selected from the UpStart Parent Survey (Benzies et al. 2013b) assessed the extent to which participants: <ol style="list-style-type: none"> (a) felt supported in parenting by their partner, (b) had someone to talk to when they needed support (c) felt positive in the parenting role, (d) had confidence in their parenting skills, and (e) believed that their emotional health was good • Items were rated on a 7-point Likert-scale, with a theoretical range of scores from 7 to 35. Cronbach's alpha coefficient for the selected items was .78
Utilization of community services (completed by all participants)	<ul style="list-style-type: none"> • Using a binomial (<i>yes/no</i>) response, assessed whether parents had accessed a family physician, public health nurse, hospital, other healthcare provider, Health Link, Early Start line, parenting classes, family resource center, or public library
Use of items in the W2P kit (completed by intervention group only)	<ul style="list-style-type: none"> • Items designed to explore how parents used the W2P kit: <ol style="list-style-type: none"> (a) which items from the kit they used (<i>yes/no</i>) (b) which items they found most helpful (<i>yes/no</i>), and (c) what they learned (<i>open ended</i>)
Awareness and use of educational resources (completed by all participants)	<ul style="list-style-type: none"> • Using a binomial (<i>yes/no</i>) response, assessed awareness and use of the <i>Healthy Parents, Healthy Children</i> (HPHC) volumes (Alberta Health Services, 2013) • Parents in the comparison group may have received HPHC books from their family physician, community health center, prenatal class, or other community settings

Table 3 Characteristics of parents and infants

	Intervention group (<i>n</i> = 195) <i>n</i> (%)	Comparison group (<i>n</i> = 186) <i>n</i> (%)
Parent gender (% mothers)	161 (82.6)	163 (87.6)
First time parent	107 (54.9)	95 (51.1)
Born in Canada	111 (56.9)	121 (65.1)
Education		
Grade 12 or less	29 (14.9)	35 (18.8)
College or university	166 (85.1)	151 (81.2)
Marital status		
Single	9 (4.6)	5 (2.7)
Common-law	35 (17.9)	37 (19.9)
Married	151 (77.4)	144 (77.4)
Type of delivery		
Vaginal	114 (58.5)	110 (59.1)
Caesarean section	81 (41.5)	76 (40.9)
Infants ^a		
Singletons	189 (96.9)	184 (98.9)
Gender (% female)	110 (54.7)	104 (55.3)

^a*n* = 389 as there were eight sets of twins

often at home; the next most frequently spoken languages were Tagalog (3.9%) and Spanish (3.1%). There were no significant differences between groups on any of the participant characteristics.

Early Parenting Experiences

Qualitative Results

When asked to think back to when they brought their infant(s) home, parents in both groups described similar joys and worries. The greatest joys were related to having a baby—variations of “bringing baby home,” “just having him/her,” “holding baby,” and “seeing baby.” Many parents expressed joy about their baby being healthy, and responses relating to family were also common:

Seeing how happy our parents [the grandparents] were. (ID# 438)

Holding our daughter and knowing that our family was together. (ID# 466)

Seeing her and her older sister together for the first time. (ID# 153)

The most frequent worries were related to the infant’s health and safety (e.g., sudden infant death syndrome, getting sick, not gaining enough weight, jaundice), followed by concerns about parenting and infant care. Parents worried about not knowing what to do, making mistakes, not being able to identify the baby’s needs, and not knowing how to

take care of a baby: “You want to do your best to make sure you can give baby everything that they need, worried you won’t be able to do that” (ID# 17). Worries related to breastfeeding were also common (e.g., difficulties initiating, not having enough milk), as were concerns about the mother’s health (e.g., recovery following caesarean section). Many parents shared worries about family functioning with a new addition to the family:

I was wondering how I was going to juggle my new baby with my other school aged children. (ID# 25)
Wondering if her older sister would adapt to a new baby. (ID# 478)

Quantitative Results

Parenting experiences did not differ significantly between groups. Mean Parenting Experiences scores (intervention $M = 31.89$, $SD = 3.12$, median 33; control $M = 31.97$, $SD = 3.02$, median 33) suggest that parents in both groups had very positive early parenting experiences.

Use of Community Services

Compared to participants in the comparison group, significantly more parents in the intervention group visited their infant’s doctor for reasons other than a regular check-up, $\chi^2(1, N = 381) = 7.74, p = .005$. An unplanned sub-analysis of parents in the intervention group revealed that significantly more experienced parents (i.e., parents with older children) versus first-time parents reported unscheduled doctor visits. There were no differences between the intervention and comparison groups in visits to public health nurses, hospitals, and other health care providers; calls to Health Link and the Early Start line; or use of parenting classes, parent link centres, public library, or other community services.

Use of Items in Welcome to Parenthood Kit

All participants in the intervention group remembered receiving the W2P Kit, and 88.6% of those who remembered used at least some of the items. When asked about which items were most useful in supporting their role as a new parent, the most frequent responses were: (a) the HPHC books, (b) infant board book, (c) onesie, and (d) *New Baby Manual for Dads*.

Parental responses to, *Please tell us three things you learned from the items in the kit*, focused on the topics of infant care, infant growth and development, breastfeeding, and community services. Parents reported learning about practical aspects of infant care: “What to expect in terms of feeding and sleeping patterns for the baby” (ID# 430), “How many dirty and wet diapers a baby needs to have”

(ID# 511), and health related information (e.g., immunization schedule, what to do when baby is sick). Many parents mentioned learning about developmental milestones, generally, and brain development, in particular. Learning about breastfeeding and the services available in the community were common responses.

The main themes emerging from questions asking parents to describe things they do with their baby because of what they learned from the resources in the W2P Kit were (a) interacting and talking with baby, (b) engaging the baby in play and other activities, and (c) reading to baby. Responses related to interacting with the baby included: “Importance of interacting, talking and singing with the baby.” (ID# 407); “[I] interacted with baby differently and more frequently than I may have otherwise.” (ID# 432); and “Talking to him often and explaining when he is doing something even though he may not understand.” (ID# 454) Some parents described specific ways to encourage interaction: “[I] mimic her sounds and facial movements.” (ID# 442); “Serve and receive like a tennis game.” (ID# 463); and “Volley the ‘conversation’ back and forth.” (ID# 471)

Some parents made reference to play in general, while others specified that they looked for toys that were stimulating, interactive, and designed to encourage brain development. Several parents described engaging the baby in other activities; “[I] walk her around to let her see lots of different sights” (ID# 442); “...get her to experience new things” (ID# 471); and singing and dancing. Parents commented that they learned about the importance reading to their baby early on. “We began reading to our baby earlier than we probably would have on our own, i.e., even though he didn’t respond at all, we kept reading.” (ID# 477)

Awareness and Use of the Healthy Parents, Healthy Children Books

Parents in the intervention group were more likely to be aware of the HPHC books than parents in the comparison group, $\chi^2(1, N=367)=5.78, p=.016$. Among parents who were aware of the HPHC resources, those in the intervention group were more likely to have used the resources than those in the comparison group, $\chi^2(1, N=317)=4.56, p=.033$. Of the parents who indicated using the HPHC books, 99% (all but two) reported they were likely to use the books as the baby grows, and 99.6% (all but one) would recommend them to others.

Discussion

In this study, we examined differences in parenting experiences and awareness and use of educational resources and community services between parents who received

an enhanced information package at birth and those who received standard discharge information. At 3 months postpartum, qualitative and quantitative findings suggested parenting experiences were similar between the parents who received enhanced and standard information packages during their infant’s birth hospitalization. Parents in both groups shared similar joys and worries, and had comparable scores on items assessing the extent to which they felt supported in parenting by their partner, had someone to talk to when they needed support, felt positive in the parenting role, had confidence in their parenting skills, and felt positive about their emotional health. Scores on the UpStart Parent Survey items were higher than would be expected based on previously reported item means (Benzies et al. 2013a), suggesting that new parents in this sample had highly positive early parenting experiences. There is a possibility, however, that including only selected items from the UpStart Parent Survey restricted the possibility of detecting meaningful differences in parenting experiences. The transition to parenthood brings many joys, but it can also be a challenging and stressful time. Pregnancy and the birth of a new baby bring about fundamental changes in the parents’ relationship and family functioning (Deave et al. 2008; Holden 2015). Although the majority of participants reported that they felt supported by their partner in their parenting and felt very positive in the parenting role, the transition to parenthood can be associated with declines in relationship satisfaction (Mitnick et al. 2009). The survey used in the current study may have been insufficiently sensitive to assess early parenting experiences, and as such it would be premature to conclude that strategies similar to the W2P Kit are ineffective to support the transition to parenthood.

At 3 months postpartum, parents who received the W2P Kit were significantly more likely to be aware of, and to have used, the HPHC books than parents in the comparison group. When parents who received the W2P Kit were asked which items were most helpful in supporting their parenting, the HPHC books were the most frequent response. These results are aligned with past research showing that new parents want access to information that is current and reliable, and want to know best practices related to infant care (Svensson et al. 2006). An immense amount of information on parenting and child development is available on the internet as well as in popular books and magazines, which can leave new parents feeling overwhelmed and confused (Svensson et al. 2006). Moreover, health-related information on the internet may be inaccurate and misleading (Plantin and Daneback 2009). Short postpartum hospital stays are considered a contributing factor to new parents’ use of the internet to meet their information needs (Plantin and Daneback 2009). Indeed, it is common for new parents to feel unprepared to go home, and dissatisfied with information they received in hospital (Deave et al. 2008; Ellberg et al. 2010; Johansson and Darj

2004; Svensson et al. 2006). However, even with shorter hospital stays, the postpartum period is a time when parents are likely to be especially receptive to education and information, and it is important to capitalize on the opportunity (McKellar et al. 2006). Although the amount of time for education in the hospital is limited, providing all parents with evidence-based resources on a variety of topics during this time may make them feel more satisfied with the information they receive and more prepared to go home, knowing that they have reliable resources to refer to when needed.

Parental responses to qualitative survey items suggest that the W2P Kit was a useful educational resource. Parents reported learning about the practical aspects of infant care, infant growth and development, breastfeeding, and community resources, which were commonly identified in previous research to be a source of questions and concerns for new parents (Deave et al. 2008; Ellberg et al. 2010; Johansson and Darj 2004; Svensson et al. 2006). Considering the importance of the early years to long-term developmental outcomes and the essential role that parents play in promoting healthy development (Black et al. 2017; National Scientific Council on the Developing Child 2015), it was especially encouraging that parents who received the W2P Kit were able to describe various practices that support development, particularly healthy parent–child relationships. Specifically, parents reported using the infant board book to interact with their infant through reading and using the ‘serve and return’ metaphor described in the *Building Better Brains* card set. Although the purpose of the W2P Kit was to increase parental knowledge and awareness of resources, it is possible that encouraging parents to read to their newborn may promote early parent–child relationships. Future research based on adult learning and parent–child relationship theories (Gilmer et al. 2016), with more rigorous methodology, would be required to test this hypothesis.

While the W2P Kit had a positive impact on parental use of educational resources, no differences were observed between the intervention and comparison groups in utilization of community services, with the exception of unplanned visits to the doctor. These results may be related to the seasonality of data collection. Participants in the comparison group completed the surveys between June and September, while participants in the intervention groups completed the surveys between September and December of 2014. Fall and winter are peak times for colds and influenza, thus infants in the intervention group may have been at an increased risk for becoming ill. Another contributing factor may have been the influenza media campaign in 2014 that focused on the reduced effectiveness in the influenza vaccine, which may have prompted more unplanned visits to the doctor. An unplanned sub-analysis of participants in the intervention group showed that experienced parents, as compared to first-time parents, were more likely to report an unexpected

visit to the doctor. Given that experienced parents have older children who may be attending childcare or preschool programs, we speculated that both seasonality and exposure may have contributed to increased unplanned visits to the doctor in the intervention group.

This study was limited by its design. Recruiting participants for the intervention and comparison groups at different time points introduced seasonal effects that could not be controlled for. For future research, sufficient resources to conduct a cluster randomized controlled design are recommended. In an effort to minimize respondent burden, a decision was made to limit the number of survey items. This may have inadvertently restricted the ability to capture meaningful differences in parenting experiences between groups. Future research exploring enhanced information packages should consider more comprehensive assessments.

Generalizability of the study results is limited by the predominantly English-speaking and highly educated sample. Education levels are associated with socioeconomic status, which in turn influences the material and social resources that parents can access, and consequently the proximal environment for child development (Bradley and Corwyn 2002; Gutman and Feinstein 2010). Maternal education can have an impact on parenting behaviors; mothers with more education may be more likely to provide their children with more interactive, involved parenting during the early years (Gutman and Feinstein 2010). Interventions such as the W2P Kit may be particularly beneficial for lower SES families, providing them with resources and information that they may not otherwise have access to. This is another area worthy of further study. Additionally, access to publicly funded postpartum health care may have served to blunt some of the outcomes. Replication of this study in jurisdictions with privately funded health care would increase confidence in the evidence for enhanced information packages. Finally, 41.2% of participants reported a caesarean birth. In this study, the higher proportion of caesarean births compared to the general population may be attributed to longer hospital stays, which increased the chances of recruitment to this study, and possibly increased knowledge and confidence in parenting skills because of a longer exposure to health care providers.

Conclusion

All parents need access to evidence-based information and resources to support parenting (Britto et al. 2017). Ensuring that new parents have access to relevant information and resources is essential given the importance of the early years in setting trajectories for lifelong development. Parents in this study were very positive about the W2P Kit and reported learning about numerous child development and parenting topics, which suggested a greater likelihood that they may

provide the kind of interactions that are known to support healthy brain development. Although more research is needed to investigate specific parenting and child outcomes, policy makers may wish to consider strategies that include enhanced information packages for parents of newborns during the birth hospitalization.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

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*Denotes reference to items in Table 1

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