Impact of a Community Health Worker (CHW) Intervention on Emotional Support, and Physical, and Mental Health of Parents of Infants and Toddlers Receiving Care at Federally Qualified Health Centers

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Abstract

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Background: Major life adaptations in parenthood impacts parents' emotional, physical, and mental health in the first 24 months post-delivery; interventions to improve these health outcomes are essential. The introduction of the PARENT-focused Redesign for Encounters, Newborns to Toddlers (PARENT) intervention demonstrates important efforts towards improving services and support for parents of infants and toddlers.

Methods: I analyzed secondary data from a clustered randomized controlled trial study occurring from June 2019 to June 2022. I performed a bivariate analysis to examine the difference in health outcomes at 12 months post-intervention between treatment groups. I conducted a two-sample t-test to compare baseline and 12-month mean score differences for the three health outcomes assessed in the intervention and standard care group. I then evaluated if participant language preference (English or Spanish) modified the impact of the

intervention. I then compared the mean score difference for each of the three health outcomes among language preference groups at baseline compared to 12-month follow-up.

Results: 785 parents were enrolled in this study, with 378 parents in the intervention and 407 in the control group. No significant differences were found in baseline demographics, including language preferences, between intervention and control groups. Baseline emotional support, physical health, and mental health were not statistically different when comparing intervention vs. control groups (Table 1). Comparing baseline to 12-month post-intervention, parents in the intervention and control groups reported lower emotional support and lower mental health scores over time (Table 2).

Considering those receiving the intervention by language preference groups and comparing baseline to 12-month post-intervention, there were no significant differences in emotional support, physical health, and mental health in Spanish-speakers. Among English-speaking parents in the intervention group, a decline in emotional support and mental health was identified between baseline and 12 months post-intervention while this same trend was not identified in Spanish speaking parents in the intervention group (Table 3).

Conclusion: The PARENT intervention may have a buffering effect on the mental health and emotional support of Spanish speaking parents when the Parent Coach is also Spanish speaking. Our results demonstrate the importance of centering community needs and providing a culturally responsive approach to care.

Introduction

In the United States, poverty is a known risk factor for several parental and early child health outcomes.[1] Understanding the complex interplay between socio-economic factors and health, especially in the critical period post-delivery for parents of infants and toddlers, highlights the necessity for targeted interventions.[2] Parents of infants and toddlers may experience loss of income when paid leave is not readily accessible.[2,3] Acknowledging how poverty and racism are intertwined in the United States, culturally responsive models of care are necessary to combat health disparities.[2,4]

Parents' emotional, physical, and mental health outcomes may be impacted in the first 24 months post-delivery.[5,6,7] Mental health complications affecting parents in the 24 months post-delivery is an adverse health condition frequently undiagnosed and untreated due to lack of knowledge and access to care.[6] Lack of parent social support for parents is associated with experiencing a sense of isolation, contributing to mental health concerns, comprimising parents' ability to care for their child during early developmental stages.[7,8]

Further, screenings for mental health may not be enough for determining the support needs of the primary caretaker; questionnaires are reliant on self-reported information, and mental health conditions exist on a spectrum, which may be more challenging to capture in a diverse pool of parents.[7] Additionally, parents may experience physical health complications. Six to nine months following the birth of a child, parents may have increased odds of experiencing urinary incontinence, developing colds or minor illnesses, and bowel problems.[9] Parents may also experience perceived post-delivery fatigue, associated with lower engagement with walking and more prolonged periods of sitting.[10]

In addition to the emotional, physical, and mental health challenges new caretakers may face, limited insurance coverage may also occur. Medicaid indicates the postpartum period to be within the first eight weeks following birth. However, studies have shown that postpartum complications remain a risk for parents during a longer period post-delivery.[5,6] Reflecting on the

interconnectedness of emotional health with physical and mental health[9], providing adequate support to racial and ethnic minority parents of infants and toddlers during crucial developmental stages is important.[1,3,4]

Low-income families experiencing racism and poverty may be at the forefront of receiving poor-quality care services – an updated model that addresses their needs is essential.[11] Further, language barriers may also be an additional concern for Latino and immigrant families, which may hinder the quality of care received. A recent study based on Federally Qualified Health Centers showed that Well Child Care clinician time is significantly shorter for Spanish-speaking families compared to families speaking English.[12] Reduced time that Spanish-speaking families have in encounters with clinicians may hinder opportunities to uncover needs and diminish overall the quality of care. A redesigned model of care can improve support services in efforts to improve overall health in parents, including emotional, mental, and physical health.[13,14]

The introduction of the Parent-focused Redesign for Encounters, Newborns to Toddlers (PARENT) intervention represents a significant stride toward addressing the challenges in access to quality care.[13,14] In a 2016 pilot study using a Community Health Worker (CHW) in a team-based approach to Well Child Care delivery, researchers assessed a redesigned model of care by implementing the PARENT intervention.[13] Researchers randomized parent participants to receive either the intervention or standard care. The PARENT intervention incorporated four different elements, which included a parent coach (serving as the primary provider for anticipatory guidance, psychosocial screening including behavioral and social factors, and other support services), a web-based instrument centering parental needs, a text message service providing child health information, and a problem-focused visit with a clinician.[13] Parents receiving the PARENT intervention reported improved outcomes for psychosocial factors (including symptoms of mental health or emotional support and reporting lower difficulty paying for basic living expenses).[13] Those receiving the intervention also reported better reception of

helpful, family-centered care.[13] These findings highlight the potential for CHWs to play a pivotal role in efforts to improve healthcare experiences during the early child developmental stages. The PARENT intervention was further implemented in a clustered randomized controlled trial in a 2023 study.[14,15] In this study, the PARENT intervention was administered through a CHW who was a bilingual, native Spanish speaker (given community demographics) with prior clinical experience and underwent a four to six-week training covering core community health worker competencies in efforts to provide culturally responsive care.[14,16] The PARENT intervention further delivered family-centered preventative care, attended to psychosocial and social needs, and provided resource referrals to parents to reduce clinician reliance as the only provider of well-child services.[14,15] The PARENT intervention allows clinics to adapt the intervention to address their needs based on clinic priorities.[17] Outcomes of the large-scale PARENT intervention demonstrated improved reception of anticipatory guidance, improved psychosocial outcomes, and enhanced attention to parental concerns.[12] Well Child Care provided to families through a culturally responsive model such as PARENT may result in better health outcomes and improved experiences in care reception.[11,12,13,14]

Interventions like PARENT underscore the importance of a culturally and linguistically attuned approach to healthcare. Implementing adequate support to underserved families of infants and toddlers is essential in improving the quality of care. [13,14,15] Providing primary care through a culturally responsive CHW can improve the trust between parents and the medical support system, improving access to resources and a sense of support for families.[13,14] By providing a more holistic approach to care through the four elements of the PARENT intervention and centering the social needs of parents, overall care received by families may improve and thereby impact the emotional, physical, and mental health of parents, given the interconnectedness of these health outcomes.[9]

For this current study, I will use data from the 2023 PARENT randomized controlled trial study and will expand to assess the impact of the intervention on parent health outcomes. While

limited studies have analyzed the potential of incorporating a CHW in a team-based approach to care intervention to improve direct health outcomes (including the physical, emotional, and mental health) of families with infants and toddlers, the evidence from the PARENT intervention points to promising outcomes.[13,14,15] Exploring the potential of PARENT intervention to improve overall health may inform the best methods to support parents of infants to toddlers. In this study, I aimed to 1) understand if the PARENT intervention improved parental emotional, physical, and mental health during the first two years post-delivery, mainly focused on a low-income, ethnic minority population, and 2) if differences in health outcomes exist between English and Spanish speaking parents with Spanish speaking parents having greater changes in health outcomes scores pre and post-intervention. Based on our understanding of the PARENT intervention impacts on parental well-being[13,14,15], I hypothesized that 1) parents receiving the intervention will have significantly higher mean scores on measures of physical health, mental health, and emotional support status, and 2) Spanish-speaking parents receiving the intervention will have significantly greater change in mean scores on measures of physical health, mental health, and emotional support status assessed pre- to post-intervention, compared to English speaking parents.

Methods

Study design and study setting:

I analyzed secondary data from the clustered randomized controlled trial study, “Community Health Workers in Early Childhood Well-Child Care for Medicaid-Insured Children” which occurred between March 2019 to June 2022. This study took place in 10 clinical sites across 2 Federally Qualified Health Centers (FQHCs) in Tacoma, Washington (4 clinics) and Los Angeles, California (6 clinics). The clinics focus on providing services for children primarily Medicaid insured in Pierce County, Washington, and Los Angeles County, California. The centers were randomized among FQHC. Clinics randomized into the control group received standard care, and intervention clinics received the Parent-focused Redesign for Encounters,

Newborns to Toddlers (the PARENT intervention). The PARENT intervention is a team-based approach to care delivery, relying on a Community Health Worker (CHW) to serve as a coach or health educator, integrating comprehensive preventative services for optimal child health. Participants were followed up over 12 months and baseline measurements were collected. This study seeks to understand how the PARENT CHW intervention influences three health outcomes: emotional support, mental health, and physical health.

Study participants:

Study participants were retrieved from the Community Health Workers in Early Childhood Well-Child Care for Medicaid-Insured Children study. Eligibility criteria for receiving the PARENT intervention included: (1) families with children ages ≤ 12 months at enrollment, (2) an adult (aged ≥18 years) parent or legal guardian of the child arriving at the clinic for a visit, (3) the family did not intend to change clinical provider in the next 12 months, and (4) the family was proficient in English or Spanish language. This population is low-income, considering qualifications for care from the FQHC center. A total of 900+ participants across the ten clinical sites were considered. I limited the sample for this study to those who completed both the baseline and 12-month surveys as we will compare baseline to 12-month health results among participants. I used de-identified participant data for this study, therefore not requiring institutional review board approval nor require an exemption as stated by the University of Washington Human Subjects Division.[18]

Data collection:

The data used for this study was collected through the following process. A computer-generated random allocation and location-stratified block randomization were used to randomize 10 FQHC clinics to the CHW intervention or continue with standard care with clinician only (control group). A total of 5 clinics received the intervention, and 5 clinics continued standard care. Participants were enrolled at their respective clinics by a research associate who obtained written informed consent and completed a baseline survey upon enrollment. A 12-month follow-up survey was

performed at the clinic or over the phone. The 12-month follow-up survey assessed primary and secondary health outcomes, including Emergency Department visits, psychosocial screening, and health care use, along with additional outcomes, including self-reported emotional support, physical health, and mental health. A total of 1283 participants were assessed for eligibility by a research team member, and 937 total participants were recruited. At baseline, a total of 452 participants were assigned to receive the intervention, and 485 received standard care. For this study, baseline and 12-month surveys were assessed, and only those who completed both surveys were enrolled in this study.

Study variables:

I assessed three outcome variables - emotional support, mental health, and physical health – outcomes were compared by treatment group (intervention and usual care group). Emotional support was assessed through a 4-item Patient-Reported Outcomes Measurement Information System (PROMIS) measure. Mental and physical health were measured through the 2-item PROMIS global physical and mental health scales. PROMIS measures are scored such that the population standardized mean for each of the three health outcome scores is a T-score of 50 with a standard deviation of 10, with higher PROMIS scores reflecting better health for each of the three outcomes. Additional variables of interest included parent language preference (English or Spanish), parent birth outside of the US (US, foreign-born), and family income (<$30,000, $30,000-$49,999, $50,000-$69,999, ≥ $70,000). Randomization of the intervention distributed participant characteristics evenly, reducing the effect of possible confounding factors.

Data analysis:

RStudio version 4.3.2 was used to run the statistical analysis for this project. I conducted a bivariate analysis to examine the difference in health outcomes at 12 months post-intervention between treatment groups using individual-level data. All PROMIS measures raw scores were converted into T-scores per PROMIS guidelines.[19,20,21] For the first aim, I determined mean health outcomes for the three health measures (emotional support, physical and mental health)

at 12-month follow-up for each treatment arm. I compared treatment and intervention groups for the three health outcomes at baseline to ensure similar baseline characteristics. I then conducted a two-sample t-test to compare the mean score differences for the three health outcomes assessed between baseline and 12 months for intervention and standard care group (Table 2). Baseline measures per arm served as a reference for each of the two treatment arms. For the second aim, I evaluated if participant language preference (either English or Spanish) modifies the impact of the intervention on the three health outcomes. I dichotomized study participants receiving the intervention into their language preference group. Similarly, I then conducted a two-sample t-test to compare the mean score difference for each of the three health outcomes by language preference groups at baseline compared to the 12-month follow-up (Table 3).

Results

A total of 785 participants completed both the baseline and 12-month survey, with 407 in the standard care (control) group and 378 in the PARENT intervention group (Fig. 1). Baseline demographic characteristics were compared between intervention and control groups. No statistically significant differences were found, reflecting similar characteristics among the two groups (Table 1). Spanish-speaking participants comprised 37.57% of participants in the intervention group and 35.63% in the control group, with no statistically significant differences (Table 1). About half of parents in this study were born outside the U.S (50.57%), with a majority of participants identifying with Latino ethnicity (74.02%), having a household annual income <$39,999 (70.06%) and identifying as mothers (95.80%). As for the outcomes assessed, baseline emotional support, physical health, and mental health were not statistically different when comparing intervention vs control groups (Table 1).

When comparing baseline to 12-month emotional support and mental health PROMIS scores in parents of children receiving the PARENT intervention (N=378) and the usual care group (N=407), both groups reported significantly lower scores (Table 2). The PARENT intervention

group's PROMIS emotional support score (mean score, 57.63 [SD: 6.96] vs 55.63 [SD: 8.35] [95% CI: 0.90, 3.10, p<0.05]) and PROMIS mental health score (mean score, 54.63 [SD: 8.38] vs 52.61 [SD: 8.04] [95% CI: 0.84, 3.19, p<0.05]). These observations were similar in the usual care group when comparing baseline to 12-month outcomes for both emotional support (mean score, 57.14 [SD: 7.66] vs 55.01 [SD: 8.26] [95% CI: 1.03, 3.23, p<0.05]), and mental health (mean score, 53.67 [SD: 8.23] vs 51.14 [SD: 8.19] [95% CI: 1.40, 3.66, p<0.05]). There were no significant differences comparing baseline to 12-month surveys in the mean scores for physical health in both intervention (mean PROMIS score, 50.61 [SD: 8.38] vs 51.11 [SD: 7.52] [95% CI: -1.64, 0.64, p=0.39]) and usual care group (mean score, 50.32 [SD: 7.82] vs 50.08 [SD:7.76] [95% CI: -0.83, 1.32, p=0.65]).

Considering those receiving the intervention (N=378) and comparing language preference groups (Spanish-speaker N = 142), the study identified no significant differences among Spanish speakers comparing baseline to 12-month surveys in emotional support (mean scores, 57.38 [SD: 7.17] vs 56.21 [SD: 8.77] [95% CI: -0.72, 3.05, p=0.22]), physical health (mean scores, 49.20 [SD: 8.63] vs 50.73 [7.13] [95% CI: -3.39, 0.33, p=0.11]), and mental health (mean scores, 54.08 [SD: 7.86] vs 52.79 [7.61] [95% CI: -0.53, 3.10, p=0.17]), as well as physical health in English-speakers (mean score, 51.44 [SD: 8.14] vs 51.34 [SD: 7.75] [95% CI: -1.34, 1.54, p=0.89]). Our findings suggested that emotional support and mental health scores declined in English speakers when comparing baseline to 12-month surveys for emotional support (mean scores, 57.78 [SD: 6.85] vs 55.28 [SD: 8.09] [95% CI: 1.13, 3.86, p<0.05]), and mental health (mean scores, 54.95 [SD: 8.68] vs 52.50 [SD: 8.31] [95% CI: 0.91, 3.99, p<0.05]).

Discussion

The findings of this study provide supporting evidence that incorporating community health workers reflective of patient population served can enhance culturally responsive care in early childhood well-child care visits. Parents in the intervention group who selected Spanish as their preferred language did not experience a significant decrease in emotional support and mental

health between baseline and 12 months post enrollment, while a significant difference in emotional support and mental health was identified in English speaking parents. Current research suggests that shifting from statistical significance to centering clinical significance may be best.[25] Based on recent recommendations, a T-score difference of 2-6 points for the PROMIS measures used in this study is considered clinically relevant.[26] This study observed differences within this range (Table 2, Table 3).

PROMIS measures scores decreased comparing baseline to 12-month outcomes for both intervention and control groups for emotional support and mental health. Part of the data was collected prior to the COVID-19 pandemic, while the other part was collected during and post-pandemic. The period differences may have been a factor in the differences in self-reported emotional support in the results from this study. An article published at the early stages of the COVID-19 pandemic suggested that families experiencing a pregnancy or in the postpartum period were at higher risk for developing mental health problems during the pandemic.[22] Emotional support is a protective factor for parents of infants and toddlers.[23] However, social distancing policies during the pandemic hindered parent emotional support from family and friends, also contributing mental health problems.[24] Physical health appeared to not change over time for intervention and usual care groups.

Implementing the PARENT intervention enhances services provided to parents, and increased time spent receiving direct guidance well child care team members. Previous studies suggest that increasing the time spent on visits may be associated with improved reception of preventative services.[14,27] This was supported by the findings in previous research among PARENT intervention families, which showed improvements in the reception of preventive care services compared to the usual care group.[14] the potential for community health workers to play a pivotal role in efforts to improve healthcare delivery and reception in pediatric primary care setitngs is clear. Family-centered approaches to care are beneficial to improving health outcomes, especially when considering parents who experience language barriers in access to

care. With 6% of physicians identifying as Hispanic and 19% of the total U.S population being Hispanic[28], optimizing well-child visits with a culturally responsive community health worker may be a resource-effective approach to enhancing care for Hispanic children and families.[13,14]

Strengths and limitations

This study involved several strengths. The data used for this study is from a randomized controlled trial, which randomized clinics into receiving the PARENT intervention or usual care. Randomizing the intervention may have reduced the effect of potential confounding variables and assigned each group with a similar distribution of characteristics. Further, the study had a large sample size, which may reduce the possibility of observing type 2 errors in the study results. This study also involved several limitations. This study relies on self-reported data from participants regarding emotional support status and physical and mental health for the primary outcomes being considered. Most surveys were completed with a research associate over the phone or in person, with some surveys being self-administered online. This may introduce social desirability bias and misclassification to the observed results. Part of the data was collected prior to the COVID-19 pandemic, while the other part was collected during and post-pandemic. During the pre-pandemic period, baseline data was collected in person at FQHC clinics. Post-pandemic, all data was collected through the phone. Further, updating the PROMIS scoring tool may be an important consideration, as it has not been updated post-pandemic.[20,21] These factors may have influenced the results and should be considered when interpreting findings.

Future Research

Future research should consider implementing the PARENT intervention in other geographical areas and other languages or ethnic groups to increase the generalizability of the study results. Further, it would be optimal to consider implementing tools for clinical assessment of emotional support, mental health, and physical health when assessing the impacts of an intervention to better understand the impacts of the intervention on parental wellness.

Conclusion

The PARENT intervention appears to have a buffering effect on the mental health and emotional support of Spanish speaking parents of infants and toddlers engage with a Spanish speaking Parent coach. Our results reflect the importance of providing culturally responsive approaches well child care delivery.

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Tables

Table 1. Baseline Demographic Characteristics, PARENT intervention, 2019 - 2022

Baseline demographics & characteristics	**Intervention N (%) or Mean (SD) N = 378**	**Control N (%) or Mean (SD) N = 407**	**Confidence Interval of difference (P-value)**
Parent Born Outside U. S	194 (51.32%)	203 (49.88%)	0.014 [-0.05, 0.09] (p=0.66)
Participant Gender (Female)	361 (95.50%)	391 (96.07%)	-0.006 [-0.02, 0.04] (p=0.70)
Household Income Below $39,999	267 (70.63%)	283 (69.53%)	0.011 [-0.50, 0.10] (p=0.18)
Race and Ethnicity (Latino) Latino	279 (73.81%)	302 (74.20%)	-0.0039 [-0.06, 0.06] (p=0.94) (p=0.87)
Race: American Indian or Alaska Native	5 (1.32%)	6 (1.47%)	-0.0015 [-0.018, 0.015] (p=0.86)
Asian	11 (2.91%)	11 (2.70%)	0.0021 [-0.021, 0.026] (p=0.85)
Black or African American	26 (6.88%)	21 (5.16%)	0.017 [-0.016, 0.052] (p=0.31)
Native Hawaiian or other Pacific Islander	7 (1.85%)	15 (3.69%)	-0.018 [-0.042, 0.0047] (p=0.12)
White	95 (25.13%)	112 (27.52%)	-0.024 [-0.086, 0.040] (p=0.47)
Other	196 (51.85%)	206 (50.61%)	0.012 [-0.056, 0.086] (p=0.68)
Multiple races	30 (7.94%)	29 (7.13%)	0.0081 [-0.029, 0.046] (p=0.66)
Language preferred/spoken at home: English	236 (62.43%)	262 (64.37%)	-0.019 [-0.087, 0.048] (p=0.57)

Spanish	142 (37.57%)	145 (35.63%)	0.019 [-0.048, 0.087] (p=0.57)
Emotional Support (PROMIS 4-item)	57.63 (6.96)	57.14 (7.66)	0.49 [-0.54, 1.52] (p=0.35)
Physical Health (PROMIS 2-item)	50.61 (8.38)	50.32 (7.82)	0.29 [-0.86, 1.42] (p=0.63)
Mental Health (PROMIS 2-item)	54.63 (8.38)	53.67 (8.23)	1.04 [-0.21, 2.13] (p=0.11)

*Note: Percentages are of total study participants, N = 785.

Table 2. Baseline and 12-Month Post-Enrollment Health Outcome Assessment by Treatment Arm (N=785)*

Health outcome	Baseline Intervention Mean (SD)	12-month Intervention Mean (SD)	Confidence interval of the difference (P-value)	Baseline Control Mean (SD)	12-month Control Mean (SD)	Confidence Interval of the difference (P-value)
Emotional Support (PROMIS 4-item)	57.63 (6.96)	55.63 (8.35)	2.00 [0.90, 3.10] (p=0.0004)	57.14 (7.66)	55. 01 (8.26)	2.13 [1.03, 3.23] (p=0.0002)
Physical Health (PROMIS 2-item)	50.61 (8.38)	51.11 (7.52)	-0.50 [-1.64, 0.64] (p=0.39)	50.32 (7.82)	50.08 (7.76)	0.24 [-0.83, 1.32] (p=0.65)
Mental Health (PROMIS 2-item)	54.63 (8.38)	52.61 (8.04)	2.03 [0.84, 3.19] (p=0.0008)	53.67 (8.23)	51.14 (8.19)	2.53 [1.40, 3.66] (p=0.000013)

*N total in intervention = 378. N total in control = 407.

Table 3. 12-Month Post-Enrollment Health Outcome Assessment by Language Preference among Intervention Parents (N=378)**

Health outcome	Baseline Spanish Mean (SD)	12-month Spanish Mean (SD)	Confidence Interval of the difference (P-value)	Baseline English Mean (SD)	12-month English Mean (SD)	Confidence Interval of the difference (P-value)
Emotional Support (PROMIS 4-item)	57.38 (7.17)	56.21 (8.77)	1. 17 [-0.72, 3.05] (p=0.22)	57.78 (6.85)	55.28 (8.09)	2.50 [1.14, 3.86] (p=0.00034)
Physical Health (PROMIS 2-item)	49.20 (8.63)	50.73 (7.13)	-1.53 [-3.39, 0.33] (p=0.11)	51.44 (8.14)	51.34 (7.75)	0.10 [-1.34, 1.54] (p=0.89)
Mental Health (PROMIS 2-item)	54.08 (7.86)	52.79 (7.61)	2.29 [-0.53, 3.10] (p=0.17)	54.95 (8.68)	52.50 (8.31)	2.45 [0.91, 3.99] (p=0.0019)

**Spanish speakers (N = 142); English speakers (N = 236).

Fig. 1 Flow chart of study participants