

Human Center Design (HCD): A Strategy to Better Understand the Educational Needs of Young Mothers in Washington DC

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ABSTRACT

Objectives: The objectives of this study, is to use the tools of HCD to identify and prioritize the educational needs of adolescent mothers in Washington DC

Method: In-depth interviews were conducted with 20 young mothers who had experienced teenage pregnancy and 10 providers assisting young parents in accessing support services, including childcare. 159 problem ideas were identified. Open and axial coding were used to code the interview transcripts and organize them into categories and themes following thematic analysis.

Results: 159 problems were generated. Of these, four main themes emerged. The results, revealed a concerning lack of; (a) Daycare services in the schools, workplace and community or (close to home, school or work), and for community recreation centers to provide space for day care, establish youth groups for babysitting, 24-hour day care services. (b) Education on life skills- Adolescent mothers, require education on co-parenting, financial literacy, training on work habits, stress management. (c) Policy and monitoring on virtual learning- Adolescent mothers, require policies to be put in place for virtual learning as an option for Adolescent mothers, paid internships or affirmative action for Adolescent mothers, with high school diploma. d) Resource Development: Adolescent mothers, expressed a desire for an app to provide 24-hour phone support for child care services.

Conclusion: Designers and policy makers could use the findings of this study to develop interventions with the stakeholders, that would prevent school dropouts among Adolescent mothers in Washington DC. Subsequently, increase higher education obtainment and reduce social determinants of health disparities among the adolescent population.

Keywords

Human Center Design, Educational needs, Adolescent mothers, Washington DC.

Introduction

Human-centered design (HCD) is a people-centered approach used in addressing real-world problems. It shares some resemblance to community-based participatory research (CBPR) [1]. Unlike CBPR, it is focused on generating information from an empathy point of view [1].

HCD process consists of three distinct phases: the inspiration phase, the ideation phase, and the implementation phase [2,3]. The first step in using HCD, is to identify or define a particular problem (referred to as a 'challenge') for which a solution is desired, then designers afterwards, working with stakeholders utilize the 3 phases of HCD to design solution. The first phase (inspiration) of HCD, is not to arrive at a solution; instead, the aims are to more fully understand the intended end-users, the barriers (such as "pain points" in HCD) they have experienced with the problem, and the solutions they have used in solving the problem [1,4]. At the

second step, (ideation phase) designers use the end-users' thoughts, feelings, and experiences to create numerous ideas on how to solve the problem. Third, phase (implementation phase), designers then quickly test (that is, prototype) the different ideas with end-users to seek immediate feedback through designing short experiments with simple versions of the solutions (low-fidelity prototypes), often paper-based, that are quickly produced to test broad concepts [1,4].

Human-centered design can be applied to a variety of practical public health problems at the individual, organizational, or community levels. For example, HCD strategies can be incorporated into patient-centered outcomes research, rapid health impact assessments, research on trauma-informed care and interventions, community-based participatory research methods such as Photovoice [5] and in teen pregnancy development program [5,6]. HCD principles has also, been used to bridge needs assessment and pilot testing, divide implementation into iterative phases by building, refining and improving a product, project, initiative in a non-linear method [4]. HCD, engages a diverse group of stakeholders and designers with diverse experiences in problem identification or solution evaluation [4]. Incorporating HCD strategies, particularly empathy, guides data collection and reporting processes, and help shape the transition or ending stages of a community-based project [7].

Pregnancy in Adolescents represents a public health issue with significant, educational, medical, emotional, financial and social consequences. Although the number of births to teen mothers is decreasing in United States, less than 50% of teen mothers are completing high school [8,9].

In Washington, D.C. specifically, over 350 babies are born to teens each year. The teen birth rate is higher than the national average, with 19.3 births per 1,000 in 2018 [10] with the rate of births to younger teen's ages 15-17, more than double the national average, 16.0 per 1000 compared to 7.2 per 1000 [10]. Also, in 2018, DC birth rate to Black teens was 32 per 1,000, higher than the national rate of 26.3 per 1,000 [11]. Washington DC has deep socioeconomic, racial, and geographic disparities, which affect expectant and parenting youth [11,12]. Motherhood is cumbersome and difficult for teenage mothers, who are undergoing maternal role and developmental task of adolescence simultaneously [13]. To successfully transition, they must adapt with adulthood social roles, physical changes of puberty, significant brain development, and nurturing of an infant [7]. Most of teenage mothers are not in a good socio economic condition so transition to motherhood becomes problematic for them [13]. Teenage pregnancy is linked to poverty, poor child physical and psychological well-being, child maltreatment, family dysfunction, and reduced educational attainment [9,14]. Teenage parents are less likely than their non-parenting peers to complete high school, but those who do are less likely to have a second teenage pregnancy, underscoring the importance of the school environment to support young parents. Overall, about 70% of high school students in DC graduate on time, whereas one study of DC teen parents found that only 60% of teen parents are in school or graduated. DC has a school-based

program to support expectant and parenting [12].

Although, U.S. teen birth rates have been declining since 1991, despite these lower rates, the United States has the highest Adolescent birth rate of all developed nations at 13.6 in 2022 and 12.5 in the District of Columbia [13] Teen pregnancy is a public health issue in the US and Washington DC [15]. Human center design is a "creative approach to problem solving [4,16] that allows direct input from the users, which leads to empathetic ideation, prototyping, and ultimately implementation. The core tenets of human-center design include the following sequential steps: empathize with all stakeholders; define the problem, conceptualize in an open minded manner; prototype solutions; and test [17]. It uses an extensive set of tools and techniques to involve and engage stakeholders throughout the design process to identify problems. Preferred methods for investigating the problem include ethnographic research such as observation, interviews, generative techniques [17].

The aim of this study, is to use the tools of HCD to identify and prioritize the educational needs of Adolescent mothers in Washington DC.

Method

Participants and Recruitment

Participants were eligible to participate in the study if they were: (i) resident of Washington, DC; and (ii) had their first child as a teenage mother.

Participants were recruited through convenience sampling using District of Columbia Network of Expectant and Parenting Teens (DCNEXT!) network partners, and snowballing. Institutional Review Approval through Howard University and informed consent was obtained from all participants before interview. Participants that met the inclusion criteria were interviewed by zoom. The interview lasted for about 1 hr. Potential participants were provided with a plain English language statement about the research. It was only after this process that interviews were carried out. This allowed the participants to consent to participate, or to opt out or cancel the interview if they did not want to proceed. Participants were given the chance to receive a \$75 gift card as a compensation for a one-time participation.

Data Collection and Analysis

In-depth and empathy interviews were conducted with 20 young mothers who had experienced teenage pregnancy and 10 providers assisting young parents in accessing support services, including childcare. Interviews were audio recorded and transcribed verbatim to ensure that the participants' statements were maintained in the transcripts. Thematic analysis was used to examine data and themes arising from the interviews [17]. Open and axial coding was used to code the interview transcripts and organize them into categories and themes following an inductive and deductive approach [18] Researchers (Designers), used the Miro, an online whiteboard, to collaboratively generate and share ideas resulting in the 4 themes [19,20].

Results

159 problems were generated (Figure 1). Of these, four main themes emerged (Table 1). The results, revealed a concerning lack of; (a) Daycare services in the schools, workplace and community or (close to home, school or work), and for community recreation centers to provide space for day care, establish youth groups for babysitting, 24-hour day care services. (b) Education on life skills- Adolescent mothers, require education on co-parenting, financial literacy, training on work habits, stress management. (c) Resource Development: Adolescent mothers, expressed a desire for an app to provide 24-hour phone support for child care services to include: information, location, registration, eligibility, referrals to social workers, school nurses.

New Heights programs, and social supports such as Nutrition Assistance Program (SNAP) benefit Adolescent mothers with 24% receiving support from the Special Supplemental Nutrition Program for Women, Infants and Children (WIC), followed by food pantries, Temporary Assistance for Needy Families (TANF), housing assistance, and childcare. Other needs include vouchers for community based child care centers, Indeed, college application, resume development and other support services. (d) Policy and monitoring on virtual learning- Adolescent mothers, require policies to be put in place for virtual learning as an option for Adolescent mothers, paid internships or affirmative action for Adolescent mothers, with high school diploma.

159 Ideas



Figure 1: Ideas generated during the Inspiration phase (in-depth and empathy interviews).

4 Themes Identified



Figure 2: 4 themes identified. Ideas, clustered under themes.

Table 1: 4 Themes identified as insights for development of interventions.

Themes
Daycare services in the schools, workplace and community or (close to home, school or work), and community recreation centers
Education on life skills
Resource Development
Policy and monitoring

Discussion

HCD (i.e., design thinking) is a repeatable, creative approach to problem solving that brings together what is desirable from a human point of view with what is technologically feasible and economically viable [4].

Educational attainment is essential for realizing higher earnings and lowering the likelihood of poverty. In order for Adolescent mothers to progress towards economic opportunities they have to finish high school, earn adequate income and maintain employment. Nearly one-third of girls who drop out of high school early stated that pregnancy or parenthood as a reason [21,22]. The availability of satisfactory day care plays a crucial role in the young mothers' decision to continue their education [23]. This study identified 4 main needs that could reduce dropping out of school and increase positive educational outcomes for Adolescent mothers living in Washington DC.

First create Daycare services in schools, workplace and community or (close to home, school or work). Adolescent mothers expressed the importance of childcare in schools, work place or close to home or school.

“Day care providers in schools as needed.”- young mother

“Establish child care in workplace.”- young mother

“Include day care in apartment buildings where Adolescent mothers live.” - young mother.

Studies have shown that child care also has the potential to affect maternal outcomes because it frees up the mother's time for work or school, leading to socioeconomic improvements for mothers which would be of benefit to their children [24]. A lack of non-parental care has been shown to be a barrier to teenage mothers' educational attainment [17]. Center care and other resources have been shown to improve their high school attendance and grade point averages, high school completion, and postsecondary enrollment and longer-term educational attainment, employment, and financial independence [18]. Access to center care has also been associated with a decrease in teen mothers' likelihood of experiencing repeat childbirths [25]. New Heights, a school-based program for pregnant and parenting teens in the District of Columbia Public Schools through activities such as Advocacy; Case management, Educational workshops and Baby Bonus Bucks (an in-kind incentives) supports students in overcoming the barriers that keep them out of the classroom, increase the number of days they attend school per year and the number of credits they accumulate [12,22].

Recent studies carried out on childcare and childcare voucher for

Adolescent mothers in Washington DC, revealed that Adolescent mothers face a lot of challenges in accessing quality childcare and childcare voucher [11].

Second, Adolescent mothers expressed the need for life skills education to equip them with stress management.

“Stress management for new Adolescent parents.”-young mother
“Help Adolescent mothers understand the roles and needs of co-parenting.”-young mother

Studies on Adolescent mothers, have revealed that in addition to their vulnerable developmental stage, incomplete educational achievement, fewer financial resources, and less social support, Adolescent mothers, experience a lot of stress that can make the transition to parenting particularly difficult [26]. Research, has shown that parenting with stress, can adversely affect parent-child relationship with a potential life-long negative outcomes and health inequities [27,28].

Third, Adolescent mothers, express their need to have access to important resources such as transportation especially private paid transportation.

“contract with ride-share to provide free transport for Adolescent mother and child to school to school/childcare”- young mother

“create an app to display all Adolescent mother's resources”- young mother

Transportation insecurity has profound impacts on the health and wellbeing of teenage parents and their children including older individuals, teenage parents, ethnic and racial minorities, those of lower socioeconomic status and those with lower levels of educational attainment [28,29]. Teenage parents are more likely to be of lower socioeconomic status and thus particularly susceptible to transportation insecurity [9,30]. Lack of transportation is a major barrier to accessing healthcare creating disparity in social determinant of health [28]. The consequences of missed appointments are many both to patients and institutions such as a reduced access to resources such as prenatal care, childcare, family planning services, and parenting education [8,28]. Missing appointments lead to delays in essential treatment and preventative care, which has the potential to increase rates of morbidity and mortality, particularly among children [28,30]. Several interventions such as Uber Health platform had shown to result in a significant reduction in missed clinic appointments and several follow-up studies [28,31,32]. Nutrition Assistance Program (SNAP) benefits Adolescent mothers with 24% receiving support from the Special Supplemental Nutrition Program for Women, Infants and Children (WIC), followed by food pantries, Temporary Assistance for Needy Families (TANF), housing assistance, and childcare. Including Vouchers for community based child care centers, Indeed, college application, resume development and other support services. Studies have shown that Adolescent mothers, value and benefit from social support [11,14].

Fourth Policy Monitoring such as online class for Adolescent mothers.

Adolescent mothers expressed the need for a policy that promotes virtual learning for Adolescent mothers.

“Approve virtual learning for sick days.”- young mother

“Give Adolescent mothers attendance leniency.”- young mother

Research has shown that, internet use and online learning method suits a variety of learning styles and have positive impacts, such as efficiency, accessibility of time and place, affordability, and improved students' attendance [33,34]. Adolescent mothers are less likely to have an Associate's Degree, a Bachelor's Degree, or another higher education degree than mothers who gave birth at an older age. This finding emphasizes the critical need for educational programs and policies targeting young mothers to help them attain post - secondary education. Programs that can provide young mothers the necessary skills and knowledge to secure better job opportunities and higher wages, will improve their economic outcomes and well-being [33,34]. Focusing on higher education attainment for teen moms is critical and necessary as higher levels of education are associated with higher levels of income [32-34]. Teen mothers face barriers that prevent them from merely attending higher educational settings as they must have an income to support their children if they work during the day, they cannot participate in classes. Moreover, if teen mothers want to attend college, in most college settings, they must have childcare [35].

Conclusion

Designers and policy makers could use the findings of this study to develop interventions with the stakeholders, that would prevent school dropouts among Adolescent mothers in Washington DC. Subsequently, increase higher education obtainment and reduce social determinants of health disparities among the Adolescent population.

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