

An Evaluation of On-Campus Lactation Spaces for Student-Parents

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Abstract

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Background: Return to work is an established barrier to breastfeeding duration. Numerous studies have evaluated the effects of federal and workplace lactation policies, however few have considered the experiences of breastfeeding people returning to school.

Research aim: This study evaluated the availability, accessibility, acceptability, and quality of on-campus lactation spaces used by student-parents at a large urban university.

Methods: In-depth interviews were conducted with student-parents ($N=18$) who had expressed milk on campus. Data collection and thematic analysis was based on the Availability, Accessibility, Acceptability, and Quality (AAAQ) framework for evaluating health services from the human rights literature and adapted for this study.

Results: For most student-parents with proximal access to a designated lactation space, room availability was exceptional and quality was marginally adequate. The provision of breast pumps, in-room sinks, and study desks were important aspects of quality discussed by the student-parents. Not all student-parents made use of the university's designated lactation spaces either due to physical or informational inaccessibility. If designated lactation spaces were not convenient, student-parents found closer alternatives such as the bathroom, staff offices, or during class.

Conclusion: Breastfeeding parents who return to school experience obstacles similar to those reported by employed parents who return to work. They require convenient access to appropriate spaces and sufficient privacy to express milk for their infants. In order to best support all learners, universities must consider the needs of this unique student population.

Background

Breastfeeding initiation and duration are priority goals included in the Healthy People 2020 initiative (“Maternal, Infant, and Child Health,” n.d.). Beyond advantages of human milk for infant growth, development, and nutrition, breastfeeding/chestfeeding¹ has longer term health benefits for the infant and for the breastfeeding parent. For the child, human milk strengthens the immune system and reduces the risk of Sudden Infant Death Syndrome and childhood obesity (Eidelman & Schanler, 2012). For the parent, early breastfeeding reduces the risk of postpartum hemorrhage and can reduce the risk of breast, uterine, and ovarian cancers later in life (Eidelman & Schanler, 2012). Given the wide array of breastfeeding benefits, the American Academy of Pediatrics (AAP) recommends that infants are exclusively breastfed for the first six months, followed by the introduction of complementary solid foods with the continuation of breastfeeding until at least one year of age (Eidelman & Schanler, 2012).

In the US, rates of breastfeeding have been increasing steadily. Among the 1993 US birth cohort, 60% of infants had been breastfed at some point (McDowell, Wang, Kennedy-Stephenson, & National Center for Health Statistics U. S, 2008). The Healthy People 2020 target for ever breastfeeding, of 81.9%, was surpassed by the 2015 birth cohort with 83.2% of infants ever breastfeeding (CDC, 2018). Hospital-based interventions, such as the Baby-Friendly hospital initiative’s Ten Steps (e.g. training for health care staff, rooming-in), are likely among the reasons for increases in breastfeeding initiation (Wright, n.d.). Despite these gains, there is a significant drop-off between breastfeeding initiation and duration. The Healthy People 2020 target for exclusive breastfeeding at six months is 25.5%. The rate for infants born in 2015 was 24.9%. Similarly, the 2020 target for any breastfeeding at six months is 60.6%; in 2015 the rate

¹ This thesis has elected to use gender neutral language to acknowledge the diverse identities of people who feed their infants using human milk.

was 57.6% (CDC, 2018). Medical contraindications to breastfeeding are rare, which suggests the national goals are modest and they are far below the AAP's recommendations (Eidelman & Schanler, 2012).

In order to meet national goals for breastfeeding, healthcare systems and communities must do more to support new families. There are many reasons why parents stop breastfeeding earlier than recommended. Common obstacles include difficulty latching on, breast pain, concerns about low supply, slow infant weight gain, and maternal health or illness (Odom, Li, Scanlon, Perrine, & Grummer-Strawn, 2013). Another major hurdle for breastfeeding people is the transition from home to return to work or school (D. L. Bai, Fong, & Tarrant, 2015; Y. Bai & Wunderlich, 2013; Bostick, Albrecht, Baghdadi, Haley, & Spatz, 2016; Kim, Shin, & Donovan, 2019; Sriraman & Kellams, 2016). Research has shown that working parents are on average 9% less likely to be breastfeeding at six months postpartum than stay-at-home parents with similar initiation rates (Y. Bai & Wunderlich, 2013).

The Patient Protection and Affordable Care Act (ACA), signed into law in 2010, provides legal protections to breastfeeding parents in the workplace. The ACA requires employers to provide “a place, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public, which may be used by an employee to express breast milk” (Wage and Hour Division, n.d.). This law also includes standards for sufficient break time to accommodate milk expression. With the introduction of these mandates, many workplaces have enacted worksite lactation support programs and on-site lactation spaces.

Numerous studies have evaluated breastfeeding support, duration, employer compliance, and parents' intention to express milk among employed breastfeeding people. Taken in sum, the majority of these studies show that workplace environments (e.g. supportive supervisors, room

access, employee culture, and break time) impact breastfeeding initiation and duration. These studies were conducted in global and domestic settings, as well as in a variety of industries including healthcare, higher education, manufacturing, sales, and the service sector (D. L. Bai et al., 2015; Y. Bai & Wunderlich, 2013; Froh & Spatz, 2016; Henry-Moss, Abbuhl, Bellini, & Spatz, 2018; Sattari, Serwint, Neal, Chen, & Levine, 2013; Tsai, 2013).

In contrast, few studies have considered the experiences of breastfeeding people returning to school. A consistent finding among these studies is that breastfeeding students often lack a private space to express their milk on campus (Bostick et al., 2016; Dinour & Beharie, 2015). People who return to school, without additional university-based employment, are not protected by law regarding their need to express milk. This group is large and deserves the same consideration provided to employees. In 2018, an estimated 10 million females were enrolled in undergraduate programs and 1.7 million females were in post-baccalaureate degree programs nationwide (National Center for Education Statistics, n.d.). The vast majority of females in undergraduate and post-baccalaureate programs are of reproductive age and therefore may become pregnant and begin breastfeeding while completing their education. Research is needed to better understand the facilitators and barriers to breastfeeding among this overlooked group.

Study Aims

The purpose of this study was to examine how well on-campus lactation spaces at a large, urban university are meeting the needs of student-parents. This exploratory research is guided by two primary aims; 1) to evaluate the availability, accessibility, acceptability, and quality of existing lactation spaces as environments conducive for expressing human milk, and 2) to document the experiences of student-parents who express their milk on-campus.

Methods

Design

This study is a descriptive, qualitative evaluation of the lactation spaces used by student-parents at an urban university. In-depth interviews were conducted with student-parents who express their milk on-campus. The interview guide and analysis were structured to reflect the AAAQ (availability, accessibility, acceptability, and quality) framework from the human rights literature (see Table 1 for definitions). Although the US has not ratified the international document that outlines this framework, the International Covenant on the Economic, Social, and Cultural Rights (ICESCR) is an appropriate international standard by which to organize this study. On-campus lactation spaces protect a family's right to the highest attainable standard of health, as breastfeeding is a behavior that promotes the health of the breastfeeding parent and the infant (Committee on Economic, Social, and Cultural Rights, 2000). The University of Washington Institutional Review Board designated this study as exempt.

Setting

Participants were recruited from the University of Washington (UW) campus in Seattle from September 2018 to January 2019. The UW is a large, public research institution with nearly 48,000 students on its Seattle campus (Office of Planning & Budgeting, n.d.). Parents in Washington State breastfeed at rates higher than in other parts of the country. Washington is one of only three states where more than 70% of infants continue to receive human milk for at least their first six months (CDC, 2018). At the UW, a central campus office catalogues some, but not all, of the designated, on-campus lactation spaces. The characteristics of these spaces, adapted from best practice recommendations by the American Institute of Architects (York & Lee, n.d.), are summarized in Table 1 and based on observations completed by the primary investigator

(PI). For the purposes of this study, lactation spaces that provided at least 70% of the features in a given AAAQ category were considered “adequate” for that category (recall Table 1).

Sample

Study participants were UW Seattle students who expressed their milk on campus, at least once, between September 2017 and January 2019. To capture the experiences of people who spend longer periods of time on campus and therefore rely more heavily on its resources, non-matriculated students were excluded from the study. All interview participants were 18 years or older.

A convenience sample of at least 16 student-parents was the target for this study. Participants were recruited through three primary methods. First, flyers were posted in central locations across campus including the student union building, academic buildings, and inside designated lactation spaces. Second, recruitment emails were sent through related campus list serves and social media pages. Third, the PI distributed flyers at local childbirth class reunions. Through these methods, 18 student-parents were recruited for participation. This sample size aligns with the findings of other qualitative studies that concept saturation may occur with a minimum of twelve interviews (Guest, Bunce, & Johnson, 2006). Furthermore, qualitative studies among employed breastfeeding parents have included sample sizes of 10 to 20, or more, participants (Gottenborg et al., 2018; Sulaiman, Liamputtong, & Amir, 2016).

Data Collection

In-depth interviews were completed from October 2018 to January 2019. Interviews were conducted in a semi-private, on-campus location that was convenient for the participant, usually a study room or a conference room. Two interviews were completed over the phone, at the participants' request. All interviews were conducted by the PI and the interview duration ranged

from 22 to 50 minutes. Interviewees received a \$10 gift card as a thank-you for their participation.

A semi-structured guide was developed for the interviews (see Appendix). The guide included eleven questions based on the AAAQ framework, demographic questions, and a mapping activity. The mapping activity was used to identify the spaces where the participant expressed her milk and the proximity of these locations to her usual study space. The interview guide was piloted with three parents who had expressed milk on campus but did not qualify for the study due to their student status or the dates of their milk expression. Minor revisions were made to word choice and question order based on these pilot interviews.

Before each interview, written informed consent to the procedures and audio recording was obtained. The PI briefly described the study and interview procedures, reminded the participant that they could skip a question or end the interview early, and encouraged the participant to review the consent form. The PI answered all participant questions about consent procedures before beginning the interview.

The audio recorded interviews were de-identified and transcribed using a digital, web-based audio-to-text transcription service. Then the PI reviewed the transcriptions while listening to the recordings to ensure accurate transcription. Corrections were made as needed.

Data Analysis

Descriptive statistics were calculated using Excel software. Transcripts were coded and analyzed using Atlas.ti qualitative research software. Thematic analysis was used to develop a codebook. Initial, structural codes were based on the AAAQ framework. Emergent codes were derived iteratively as additional themes arose from the data (Tolley, Ulin, Mack, Robinson, & Succop, 2016). To further refine the codebook, the PI and a doctoral student assistant separately

coded four transcripts. Coding discrepancies were reviewed weekly and discussed to achieve consensus. Codes and code definitions were modified as a result of these meetings. Prior to consensus discussions, coding agreement between the PI and student assistant ranged from 66% to 73%, with an average agreement of 70%. Two weeks after all transcripts were coded, the PI randomly selected and recoded four transcripts to assess validity. The average recoding agreement was 77% with a range of 74% to 85%.

Transcribed material was reviewed by code groupings to identify recurring themes in the discussion of aspects of the AAAQ standards (i.e., availability, accessibility, acceptability and quality) and student-parent experiences. Experiences varied but common trends were identified in numerous topics including space accessibility, privacy considerations, and key challenges to on-campus milk expression. Exemplar quotes were selected to represent these themes (see Table 3). Data from the mapping activity was compiled into a master map to record approximate locations of lactation spaces used by participants. This process revealed official on-campus lactation spaces not previously catalogued on the university's map as well as unofficial spaces used by student-parents.

Results

Participant Characteristics

Eighteen student-parents completed the interview; more than half (53%) of them continued to express milk on campus at the time of the interview. The age of participants ranged from 24 to 40 years old, with an average age of 32. Weekly hours on campus ranged from 8 to 50 hours across the sample. Eleven participants had an additional, non-student role that contributed to their on-campus hours such as a job, teaching assistantship, fellowship, or committee

volunteer position. The sample was predominately White and enrolled in graduate programs. Additional demographic characteristics are reported in Table 2.

Availability

Availability is the first component of the AAAQ framework from the International Covenant on the Economic, Social, and Cultural Rights (ICESCR). Participants generally found lactation rooms to be available when they needed them. Five reported that room availability was a key strength of the UW's lactation resources. As illustrated below, availability was facilitated by the first-come-first-serve and multi-user formats of many on-campus lactation spaces.

"[It] was always empty when I went in there. I never saw another person, even though there's room for two people." – ID #2

"The other place where I work, you have to sign up for a time slot. Which is why... the [SCHOOL] setup is a little bit more convenient because you don't have a specific time slot. So you know, if a research meeting took too long or I was in a clinic for too long or something like that, I could potentially lose my slot and then wouldn't have as many options." – ID #15

Some participants thought that a multi-user format was a desirable room feature while others felt that this was a disadvantage. Although a multi-user format improves the availability of lactation spaces, participants identified two primary challenges with this arrangement. First, the lactation rooms can get overcrowded. Many students have lunches and breaks around the same time so the room is in high demand during these periods.

"I remember once going pumping myself and two other ladies showed up and they were sitting on the floor." – ID #3

"I think they're pretty crowded, but I think that's also an artifact of when everyone's schedule's line up. Right? So when you're taking classes, everyone has the exact same time." – ID #1

Second, while allowing multiple students to use the space simultaneously increases availability, this arrangement reduces privacy. Some student-parents felt uncomfortable in these situations.

The individual's comfort level was moderated by the availability of privacy screens, the participant's social familiarity with other users, and personal modesty.

"So there were too many of us in there but we, it was usually my classmates or other women who, you know, bonding or whatever." – ID #16

"There were I think only two more [students] and they each had a table that was separated by a partition. And they were really friendly and we would just share, share the room." – ID #11

"I'm surprised that they expect two people to pump in there at the same time because that would not follow the rules of being unintruded... free from other people's view space... Very kind of like, not appropriate." – ID #2

Accessibility

Accessibility, as defined by the ICESCR (see Table 1), has four overlapping dimensions, three of which are applicable to an analysis of on-campus lactation spaces: information accessibility, nondiscrimination, and physical accessibility.

Information Accessibility. Initially, many participants did not know where to find information about on-campus lactation spaces.

"I just wish it would be easier to find information about this. It just didn't really feel like I had a good gauge of like how I'm supposed to go about finding the information." – ID #12

Ultimately student-parents gathered their information from a variety of sources including academic advisors, department staff, new student orientation, facilities staff, and online resources. Common sources of information were classmates and co-workers who also expressed milk on campus.

"I don't know that I would have necessarily known where to go or like how to even start the process if my co-fellow had not told me... She showed me where all the rooms were and told me about how to get a form signed." – ID #15

A central university office catalogues some of the on-campus lactation spaces in an online map. One-third of participants said they had seen the map and cited it as a helpful source

of information. Participant 5 describes her experience: “So I looked it up on, like I googled the website where you can find this [pointing to the map], and under the map there so I clicked on the [BUILDING NAME] and then it gave information on who to contact and get access”.

However despite the map, some students had difficulty finding the lactation rooms because of poor signage within each university building.

“I couldn’t find it even though it’s on the map, I couldn’t find it. So I asked Information and they said ‘oh it’s around the corner’... And then when I got into [AREA NAME] I still didn’t... it wasn’t clear where it was. So I asked the receptionist person in there and said ‘have you seen this place?’ And it’s in a kind of a back room tucked away.” – ID #4

“I’ve walked around campus thinking about this issue and kind of actively looking for signs for [lactation rooms] and I’ve never seen them.” – ID #6

Nondiscrimination. No student-parent reported experiencing discriminatory access to lactation spaces based on gender-identity, race, age, or ability. However, there was a general sense that campus visitors may not be able to access the lactation spaces that they use.

“One thing I noticed, I went to school with my sister. And my sister just got a baby and the only way she can use the lactation room is if she is UW student. So it make her really difficult, even though she is my sister, she cannot use the room.” – ID #7

Other student-parents used lactation spaces that were exclusively set up for their department. These department-specific rooms were not advertised broadly and were rarely included in the online map of lactation spaces. It was unclear whether exceptions would be made if a student from another department specially requested access to these rooms.

“I think ours is all kind of kept quiet in the [DEPARTMENT NAME]. Like very, like they work with their own students.” – ID #14

Physical Accessibility. Nearly all of the lactation spaces on campus require student-parents to register for room access. This typically involves signing paperwork, checking student ID cards, and receiving a key or access code. Sometimes there is an additional orientation or scheduling

process. Other times the process is streamlined and the student simply picks up the key from a central location. Some participants describe their experiences this way:

“They looked at my license, had me sign some paperwork, ... and then gave me a code.” – ID #1

“I just have to go pick up the key anytime I need it... from the facilities person.” – ID #8

Having convenient locations was very important to the participants. They described milk expression as a multi-step process including travel time, set-up, dressing/undressing, clean-up, and milk storage. It was important to have lactation rooms nearby so that this process could be quicker and therefore easier to fit into their class schedules and group meetings.

“That’s almost a 10 minute walk probably. And then pumping takes 20 minutes, about. And then there’s clean-up... I mean we’re talking like possibly 45 minutes to an hour thing to pump once. Like it just seemed unreasonable to me.” – ID #8

The average time for study participants to walk to their primary lactation space was 4 minutes 40 seconds. This ranged from 30 seconds to 15 minutes. Many student-parents shared that if the designated lactation space was too far away then they made alternative arrangements to use a closer, non-designated space (shared student offices, staff offices, bathrooms).

“So I feel like it’s just out of the way. Whereas if I’m okay with like being exposed in somebody else’s office or something. And maybe like for me it’ll be worth it for the time aspect of it.” – ID #14

Without prompting, participants were quick to identify several regions on the campus map that lacked lactation rooms. These areas included academic buildings, libraries, and athletic facilities; services frequently used by students.

“In the middle of campus there really isn’t much, Or this part around the quad area [pointing to the map] there isn’t much down here. So just kind of dispersing or creating more space on campus I think would be helpful.” – ID #5

“It’s kind of ridiculous. Like, I mean there’s this whole area here [pointing to an area of the map], and whole area here [pointing to a different area of the map], where none of these buildings have [rooms].” – ID #6

Physical accessibility to designated lactation spaces is uniquely challenging for student-parents who attend night classes. In the evening there is less staff on campus and many rooms, such as spare classrooms and offices, are locked. Participant 18 describes why she decided to pump in the bathroom:

“During the dinner break or before class that night, I looked for areas in the building where I could sit and pump without disrupting anybody. And the bathroom... basically all the non-bathroom rooms were locked and the bathroom was not.”

Acceptability

Many student-parents described the designated lactation spaces as functional but not comfortable. They identified chairs, tables, outlets, and locking doors as the bare necessities for a functioning lactation space.

“They were just functional... Just the fact there was a chair and a table.” – ID #3

“I mean it feels like an afterthought. The lactation room, it feels like it’s a necessity and it checked off some boxes, but that they’re willing to do the bare minimum [laughs]. It’s what it feels like!” – ID #13

For a lactation space to be respectful and appropriate, many student-parents highlighted privacy as an important factor. This was experienced in both designated and unofficial lactation spaces. Feelings of privacy begin with room access. Walking through crowds, bathrooms, or large public areas to access the lactation space felt uncomfortable for some participants.

“When going through the [AREA NAME] ... it’s packed. And again, I’m not shy, but I had to like squeeze past a bunch of people and go into the room. Versus the other rooms where there’s not really a lot of people around.” – ID #4

Once the student-parent is in the lactation space, sound barriers are critical to establishing a safe, private, and comfortable environment.

“I get a little bit nervous sometimes, that like someone’s going to walk in... there’s no like, sound barrier. So when anyone walks by it sounds like they’re walking right in.” – ID #8

“It’s not the greatest thing in the bathroom. I can hear people coming in and out and the toilet flushing. And it’s not the most relaxing pumping experience.” – ID #9

A lack of privacy and modesty is a familiar experience for many student-parents because lack of privacy is common in many birth experiences. Some, but not all, were comfortable and satisfied with arrangements that lacked privacy.

“I’ve personally don’t mind. I mean like if you’ve been through the birthing experience, there is nothing like shy [both laugh], like modest about birth. So I feel like if you’re in there, most of you have been through that experience.” – ID #14

Quality

Across campus there is significant variety in the quality of lactation spaces. Some spaces are outfitted with couches, kitchenettes, and large desks. Study participants said that they enjoyed spending time in these well-equipped rooms.

“It was good. I liked it better than the student room.” – ID #11

However most spaces were “bereft and sterile” (ID #1), places where “we wouldn’t be there if we didn’t have to be there” (ID #13).

According to the ACA, workplace lactation spaces considered to be of adequate quality are spaces shielded from view, free from intrusion, and not the bathroom (Wage and Hour Division, n.d.). When asked about these three aspects specifically, only 60% of the lactation spaces used by study participants were classified as meeting all three ACA requirements by the participants. Although not addressed by the ACA, interview questions asked about additional quality features such as room aesthetic, condition, and amenities provided.

Aesthetic. Many participants described the lactation rooms as cold, uninviting, and filled with “somebody’s unwanted things” (ID #13). Frequently, participants drew comparisons between the lactation rooms and old hospitals or storage closets.

“There’s nothing anywhere. It’s like partially storage. Like sort of random tables and stuff on the wall... It’s really weird.” – ID #12

“Like it’s a terrible room. It’s completely outdated. There’s like really horrible, like really medical. It’s very medicalized. But like in an old school like 1950s, terrible kind of way.” – ID #2

While some participants felt that room aesthetic was less important than other features, such as a convenient location or an in-room sink, others described how the physical qualities of a lactation space may impact milk production.

“I’ve done a lot of pumping in bathrooms over time, like on campus and other places when there weren’t other options. And I never get like half as much milk as I do in any other space. Because the whole time I’m like, ‘ugh, I’m sitting in a bathroom and this is stressful and why am I doing this?’ And I think a lot of things we know about, like sex and childbirth, a lot of milk production is super psychological. So if you’re stressed about it, it can stop working.” – ID #10

Condition. Overall, student-parents found the cleanliness and condition of the on-campus lactation spaces to be adequate. However there was general consensus that there were unclear expectations about who was responsible for keeping the rooms clean. In many situations students thought that custodial staff were emptying trash cans and cleaning the floors, but they were not certain if the countertops were wiped off or the sinks cleaned out. They wondered if this was their responsibility.

“It hasn’t been like dirty, but I don’t think there’s anyone in there like cleaning it up.” – ID #13

Chairs. Participants agreed that having a chair in the lactation space was critical for functionality. The quality of chair varied between rooms but overall this was less important.

“The two chairs that they have in there are like small, like wire frame, plastic seat back chairs... So not comfortable chairs.” – ID #1

“There’s an actual like single seat couch, so it’s a little bit more comfortable... Comfortable chairs are preferable but not a requirement.” – ID #5

While chair quality is not a critical component of the lactation room, it did not go unnoticed or unappreciated. Student-parents said that being provided with comfortable furniture was emotionally supportive, as much as physically supportive.

“It’s nice to feel like, ‘oh, somebody put a nice chair in here for me.’” – ID #4

Surfaces. All of the lactation spaces had a surface which could hold a breast pump or supplies. Side tables, desks, shelves, and filing cabinets were all used for this purpose. As students, participants especially appreciated desks in lactation spaces so that they could study while expressing milk. Other types of surfaces did not provide enough space to multi-task.

“[The shelf] is about big enough to fit your pump supplies... So it’s really hard to do any work while you’re pumping. And so if you’re pumping for half an hour it’s a huge timeline.” – ID #12

“I don’t know why they can’t put a desk in there because we’re all obviously studying in a school.” – ID #13

Sinks. All of the lactation spaces had a nearby sink, typically in a bathroom or department kitchen, but less than half of catalogued spaces had an in-room sink (see Table 1). Participants consistently listed an in-room sink as a very important feature for a lactation space. They felt that it was not sanitary or practical to wash the breast pump parts in the bathroom sink.

“You’re like washing things off in a bathroom. You don’t really want coliforms and any other things to be getting all over your things that you’re making food for your kid for.” – ID #15

“There’s also no place in the bathroom to set your pump pieces [after washing]. So I found myself putting them on the like ledge underneath the mirror. Which who knows what’s been there.” – ID #16

Without clean sinks easily available, many participants chose to not wash their breast pump parts at school after each milk expression session.

“I have a clean bag and a dirty bag. And I keep my clean supplies in the clean bag and after pumping I put them in my dirty bag and wash them when I get home.” – ID #17

Breast pumps. Half of study participants (n=9) identified carrying breast pumps and related equipment to and around campus as a key challenge for milk expression. Specific challenges included back pain, inconvenience, and social insecurity.

“I didn’t want to lug it around. Yeah. Especially because I have back issues.” – ID #13

“So I’m walking across campus essentially with like a small suitcase with the breast pump, a massive backpack with all my books with everything for the day plus like my lunch and dinner in a bag. So I’m carrying three bags and schlepping across campus. Like just little things like that, like just kind of wear and tear on you.” – ID #6

“If you’re a little insecure like me sometimes, you’re like, ‘what do people think, I’m carrying around my whole life with me to class for a day?’” – ID #16

Equipping lactation rooms with university-provided breast pumps was often suggested as a solution. Across campus, 48% of lactation rooms included a functioning breast pump (see Table 1). However most of these rooms were located in the university hospital or administrative buildings and therefore used infrequently by student-parents.

“I think if the UW actually had the like hospital grade Medela pumps in the pumping rooms that would be amazing. Like, if you didn’t have to bring your own pump or buy one to leave on campus, if you could just rely on like high quality hospital grade pumps that you just brought your connectors to.” – ID #1

Some on-campus lactation rooms provided breast pumps but they were outdated and appeared non-functioning.

There’s two very old, I don’t know if they’re functional, breast pumps that the university provides. And I believe the connections to make this breast pump work are no longer manufactured.” – ID #15

Features of Catalogued Lactation Spaces

In line with the experiences of student-parents, the majority of lactation spaces (19 of 25) across campus scored adequately in availability features such as not requiring reservations. Less than half of the catalogued lactation rooms included more than 70% of accessibility and acceptability features. For example, not requiring an orientation and having walls that reach to

the ceiling for maximum privacy. Additionally, of the 25 catalogued lactation spaces, fourteen are within unlocked buildings and therefore more likely to be accessible for students. However despite being in an accessible building, some lactation rooms are reserved to only be used by students from specific academic departments. About half of the catalogued lactation rooms (12 of 25) provided over 70% of quality features recommended by the AIA (e.g. in-room sink, supportive chair, cleaning supplies). Nineteen lactation spaces scored adequately in one or two categories. Six spaces scored adequately in three or four categories. On average, each lactation space scored adequately on 2.1 out of 4 AAAQ categories. Several of the lactation spaces described by participants were not visited by the PI either because the participant used an informal space (e.g. staff office, bathroom) or the room was only available for use by students in a specific academic department and therefore not catalogued on the online map.

Discussion

The themes presented by student-parents in this study are consistent with the experiences of employees who express milk in the workplace. Most students were satisfied with room availability. Similarly, a study of breastfeeding employees by Bai and Wunderlich found that over 70% of participants were satisfied with the availability of lactation spaces at work (Y. Bai & Wunderlich, 2013). Availability may also be influenced by room design such as multiple occupancy arrangements. In a study by Henry-Moss and colleagues at an academic medical center, 83% of participants preferred multiple occupancy rooms, with curtained privacy, to help reduce wait times (Henry-Moss et al., 2018). This preference was seen among some UW student-parents as well. However, not all multiple occupancy rooms on campus had a sufficient number of partitions and screens to provide adequate privacy to users. So this preference was not universal across study participants.

Convenient location is an AIA best practice for lactation and wellness room design. They recommend that each building should be equipped with at least one lactation or wellness room (York & Lee, n.d.). Student-parents identified large regions of campus without any catalogued lactation rooms. These regions included areas with academic buildings and classrooms, where student-parents are likely to be studying and attending class.

Student-parents at the UW walked an average of 4.7 minutes from their primary study space to their primary lactation space. This travel time is shorter than the hypothetical time period presented in the Henry-Moss study of 5.6 minutes (Henry-Moss et al., 2018). This may be due to the fact that student-parents did not regularly use lactation spaces that were inconvenient to their primary study spaces. Instead they would find a closer alternative such as the bathroom, staff offices, or during class.

No previous workplace or university-based studies have discussed lactation room privacy or safety in depth. Henry-Moss's study lightly addressed this topic by noting that only 36% of participants felt that their office or desk at work was sufficiently private for milk expression (Henry-Moss et al., 2018). Like many employees, most student-parents do not have access to a private, personal office at school. Occasionally, doctoral or fellowship students may have access to a shared office used by two or more students. Some student-parents used their shared office as their primary lactation space, swapping privacy for convenience. While well-provisioned multiple occupancy lactation rooms may provide sufficient privacy for milk expression, a shared academic office without visual partitions may not be comfortable for all student-parents.

By the definitions established for this study, most of the catalogued lactation rooms on the UW campus are marginally adequate. Only half of rooms included 70% or more of the quality-related features recommended in the AIA's best practices (see Table 1) yet lactation

room quality is a critical component of the milk expression experience for employed breastfeeding parents. Previous studies have suggested that simply allocating private spaces for milk expression is insufficient to supporting the health of this employee population (Y. Bai & Wunderlich, 2013; Froh & Spatz, 2016). The quality of the space has a significant impact on breastfeeding duration (Y. Bai & Wunderlich, 2013). A university-based study among student-parents drew a similar conclusion; compliance with the ACA lactation room requirements is not equivalent to providing adequate or appropriate spaces (Dinour & Beharie, 2015).

Student-parents identified university-provided breast pumps as an important, albeit rare, feature in on-campus lactation rooms. Breast pumps are heavy and inconvenient to carry during the commute to campus. Additionally, most students do not have secure and convenient storage for this equipment during the school day. Workplace-provided breast pumps are more common than university-provided pumps and have been significantly associated with breastfeeding duration and exclusivity (Y. Bai & Wunderlich, 2013; Kim et al., 2019). In the Henry-Moss study, participants were asked to rank common lactation room equipment from most to least important. Breast pumps were the number one preferred piece of equipment with 62% of participants listing hospital-grade pumps in their top three preferred items (Henry-Moss et al., 2018). Like breastfeeding employees, breastfeeding student-parents may benefit from universities providing hospital-grade breast pumps in on-campus lactation rooms.

Student-parents also listed sinks, preferably in-room, as an important feature for on-campus lactation spaces. Most participants used lactation spaces that did not provide an in-room sink and were expected to wash their breast pump parts in the bathroom sink. This raised concerns about sanitation, infant health, and social discomfort. Employees in Henry-Moss's study also highlighted the importance of sinks, with 59% of participants listing it in their top

three preferred equipment (Henry-Moss et al., 2018). Given the restrictions of their lactation room environment, some student-parents developed alternative arrangements for cleaning pump parts. However the American Academy of Pediatrics and the CDC recommend that breast pump parts are washed as soon as possible after milk expression (American Academy of Pediatrics, 2017; “How to Keep Your Breast Pump Kit Clean,” 2017). In-room sinks would facilitate this healthy practice.

The experiences reported by UW student-parents identified similarities in the lactation room preferences of students and employees. The provision of breast pumps and in-room sinks are priorities for both groups. Furthermore, like breastfeeding employees, breastfeeding students are willing to walk approximately five minutes to access a lactation room. Given these preferences and the AIA recommendations, universities should strive to provide a lactation room within every campus building. When this is not possible, or in very dense areas, there should be at least one room in every region of campus. In addition to increasing the number of on-campus lactation rooms, universities should improve informational accessibility so that student-parents can find these spaces more easily. This could be facilitated through announcements of lactation room locations during new student orientation sessions, direct advising by department faculty and staff, promotion of online resources, and clearer campus signage.

As they do for employed parents, high quality and easily accessible lactation spaces may positively impact the breastfeeding duration and experiences of student-parents returning to school after childbirth. Lactation space improvement could influence student-parent experience across the US. According to an assessment of higher-education lactation policies by Bostick and colleagues, 55% of colleges and universities have designated lactation spaces accessible to their

students (Bostick et al., 2016). The experiences and preferences identified by students at the UW may be applicable to student-parents in other university settings.

Limitations

This study is limited due to its sampling framework, selection bias, recall bias, and the unique features of its setting and participant demographics. A convenience sample was used to recruit student-parents from a large university. This sampling framework is vulnerable to selection bias because it is possible that breastfeeding student-parents with stronger opinions were more likely to participate. Therefore the study may have collected more extreme views rather than moderate ones. Additionally, in-person interviews are dependent on the participants' accurate recollection of experiences, which makes this study susceptible to recall bias. It may be more likely that participants remembered extreme experiences, such as particularly accommodating or particularly unacceptable spaces. Both the selection and recall biases apparent in this study may have led to a polarized depiction of UW lactation spaces, which may or may not be accurate.

Seattle and the Pacific Northwest region is generally considered to be very "breastfeeding-friendly" with several Baby-Friendly designated hospitals and a wide network of International Board Certified Lactation Consultants (IBCLCs) available to support breastfeeding parents. Additionally, due to its large, urban campus, results from this UW sample may be less applicable to smaller colleges in rural environments. Furthermore, the study participants were predominantly White graduate students. Their experiences may not reflect those of a more diverse population. Additional studies among undergraduate and more racially diverse student bodies would enrich the field's understanding of student-parent's breastfeeding experiences. Although data on academic department was not formally collected as part of the study

procedures, participants' selection of on-campus locations for their interviews suggests that 11 out of 18 participants were affiliated with health sciences programs (e.g. medicine, dentistry, nursing, and public health). It is possible that student-parents enrolled in health sciences programs have a more in-depth knowledge of breastfeeding benefits which may impact their desire to breastfeed. They may also be surrounded by more supportive faculty or peers than student-parents in other academic departments. Further research incorporating a diverse sample of student-parents across many academic departments would greatly contribute to the results of this exploratory, descriptive study.

Conclusion

The variety of experiences with lactation spaces reported by breastfeeding student-parents were influenced by their course schedule, academic building, department support, and personal factors including modesty and expectation. For most student-parents with proximal access to a designated lactation space, room availability was exceptional and quality was marginally adequate. Not all student-parents made use of the university's designated lactation spaces either due to physical or informational inaccessibility. Breastfeeding parents who return to school experience obstacles similar to those reported by employed parents who return to work. They require convenient access to appropriate spaces and sufficient privacy to express milk for their infants. Without legal protections for these accommodations student-parents may be overlooked. In order to best support all learners, universities must consider the needs of this unique student population when designing facilities, training student services staff, and welcoming new and returning students to campus.

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Table 1. AAAQ Adherence of Designated On-Campus Lactation Spaces (*N* =25 lactation spaces).

Definitions ^a	Item	<i>n</i> (%)	Number of Adequate Spaces ^b
Availability: “functioning public health and health-care facilities, goods and services, as well as programs, have to be available in sufficient quantity”	Does not require reservation or scheduling	19 (76)	19
	Walk-ins welcome	19 (76)	
Accessibility: “health facilities, goods and services have to be accessible to everyone without discrimination... Accessibility has four overlapping dimensions: non-discrimination... physical accessibility... economic accessibility (affordability)... [and] information accessibility”	Safe location	25 (100)	10
	Accessible location for all students	12 (48)	
	Labeled as “Lactation/Quiet Space”	23 (92)	
	Does not require key or code	5 (20)	
	Does not require orientation	17 (68)	
Acceptability: All health facilities, goods and services must be respectful of medical ethics and culturally appropriate, i.e. respectful of the culture of individuals, minorities, peoples and communities, sensitive to gender and life-cycle requirements, as well as being designed to respect confidentiality and improve the health status of those concerned”	Shielded from view	25 (100)	11
	Locking door	15 (60)	
	Indicator for “Vacant/Occupied” (privacy sign or lock indicator)	12 (48)	
	Walls reach up to the structure/ceiling	17 (68)	
	Sound-dampening materials (carpet, curtains, wall-coverings)	13 (52)	
Quality: “health facilities, goods and services must also be scientifically and medically appropriate and of good quality”	Clean environment	24 (96)	12
	Calming environment	9 (36)	
	Not the bathroom	24 (96)	
	Warm room temperature	22 (88)	
	Chair is in good condition	24 (96)	
	Chair is comfortable and supportive	20 (80)	
	Electrical outlets proximal to chair and surface (within 3 feet)	23 (92)	
	Table/counter/surface is in good condition	23 (92)	
	Storage space/lockers for pumping supplies	5 (20)	
	In-room sink	11 (44)	
	In-room refrigerator	10 (40)	
	Functioning breast pump	12 (48)	
	Coat rack/hooks	12 (48)	
	Mirror	8 (32)	
	Cleaning supplies (paper towels, tissues, disinfectant spray/wipes, hand sanitizer, soap)	24 (96)	

^a Definitions from General Comment No. 14 from the International Covenant on the Economic, Social, and Cultural Rights (Committee on Economic, Social, and Cultural Rights, 2000)

^b A space was judged as adequate if it provided at least 70% of the items that represent the category

Table 2. Participant Demographics ($N = 18$).

<i>Characteristic</i>	<i>n (%)</i>
Current pumping status*	
Ongoing	9 (53)
Concluded	8 (47)
Hours on campus (per week)	
<10	2 (11)
10-19	7 (39)
20-29	8 (44)
30-39	0 (0)
40+	1 (6)
Student status	
Undergraduate student	1 (6)
Graduate student	15 (83)
Professional student	2 (11)
Other non-student roles on campus (employment, TA, extracurricular activities)	
Yes	11 (61)
No	7 (39)
Participant's age (years)	
<25	1 (6)
25-29	3 (17)
30-34	9 (50)
35-39	4 (22)
40+	1 (6)
Participant's race	
White	13 (72)
Asian	4 (22)
Mixed race	1 (6)
Parity	
1	13 (72)
2	2 (11)
3	3 (17)
Youngest child's age at parent's return to school (weeks)	
<8	6 (33)
8-15	4 (22)
16-23	3 (17)
24-31	3 (17)
32-39	1 (6)
40+	1 (6)

* $N=17$, one participant was unsure whether she would continue to pump on campus for the upcoming quarter (interview was completed during academic break)

Table 3. Themes and Quotations

Theme	Theme Definition	Example Quotations
Availability	Sufficient/insufficient quantity of rooms or availability/scheduling of room use.	<p>“I can typically find a space to use within when I need to.” – ID #12</p> <p>“They are sort of first-come-first-serve and I haven’t really encountered a time when I haven’t been able to use the space.” – ID #5</p>
Accessibility – Information	Space accessibility/inaccessibility based on seeking/receiving information about space location and access protocols.	<p>“I’m not 100% sure what’s all available there. But certainly nobody provided me specifically with any sort of information.” – ID # 8</p> <p>“It was very obvious who was pumping cause everyone has all the pumping stuff. So yeah, it was funny because [my classmate] was kind of like ‘oh do you have the room keys to all the rooms’ and I said, ‘no I don’t’. So she kind of led me.” – ID #3</p> <p>“It’s like you go down, you unlock a door, and you’re in there and it’s not really clear where you’re supposed to pump.” – ID #12</p>
Accessibility – Nondiscrimination	Space accessibility/inaccessibility based on personal characteristics of the user (e.g. department membership, student status).	<p>“It’s specifically for people in the department.” – ID #1</p> <p>“Yeah, so it wasn’t straightforward. It’s not like somebody who was just visiting could go pump there, it’s really just for students.” – ID #6</p>
Accessibility – Physical	Space accessibility/inaccessibility based on physical barriers (i.e. distance, disability, locked doors, paperwork).	<p>“If it’s not in the building where you are, you just can’t use it... I’m not gonna walk to another building and add 5 to 10 minutes on either side of my pumping session that already takes 20 minutes out of my day. Like, I would never use a resource that wasn’t in the building I was in. I would find something in the building I was in.” – ID #17</p> <p>“I went to the room and you need a key to get in... But then right beside the room there’s a small sign saying who to contact to get that key. So I called her right when I was there. And she had mentioned that I had to go through an orientation to use the space... she came with the key and she let me in.” – ID #5</p> <p>“I didn’t know if I was going to be able to access it... and that whole day I’m worrying ‘Am I going to even have somewhere to pump tonight?’” – ID #7</p>
Acceptability	The appropriateness of the space. Includes topics such as safety, privacy, and comfort.	<p>“I keep hearing people. Right in front of the lactation room is locker. So people like opening them and in front of the room... I don’t feel safe, so I always like being paranoid while I’m pumping.” – ID # 7</p> <p>“There’s one screen. So you can either choose to obscure yourself from the door or obscure yourself from the other person pumping, if there’s something in there, but not both.” – ID #15</p> <p>“[It] feels weird because you first walked into a bathroom.” – ID #1</p>

“If two people are pumping there I don’t know how comfortable that is. My classmates were really comfortable with each other. I think we kind of got like, ‘we all gotta do this, let’s just do it’ kind of attitude... And there was really no privacy. Like you just had to turn your back... Your dignity goes out the window, you know.” – ID #3

Quality – Aesthetic The aesthetic components of the lactation space (i.e. artwork, natural light, carpeting, curtains). This also includes emotional responses to the space such as feeling calm, relaxed, or anxious.

“But you go in and [chuckles] it's just white walls. It's kind of very cold actually.” – ID #5

“It’s just kind of like makeshift. Some of the stuff is makeshift. Like I said, the microwave is broken. The windows, it’s just like us taping up paper. Kind of like that.” – ID #14

“I think they tried because they have some old painting in there. I’m sure they’re from some like retired faculty that’s not here anymore from like 30 years ago or something. Like everything just seems really old.” – ID #13

Quality – Condition The physical condition of the lactation space (e.g. functionality, cleanliness).

“So I think that the school is doing a good job about like cleaning the floors, taking the garbage out, replacing the paper towels. But I kinda think it’s up to us to like wipe off the counter.” – ID #14

“I have like wipes and paper towels and things, so yeah. I wouldn’t set my food on the counter or anything.” – ID #8

Quality – Amenities University-provided equipment or materials in the lactation space. Includes description of the equipment’s condition or purpose.

“I think even having a bigger table so at least if I’m pumping I can at least have my lunch... Or maybe even I’m studying at the same time, a place where I can put my laptop.” – ID #3

“And the pump they give you that’s in the room is like an antique. It’s like ancient. I’ve never even seen those, in like, like nowhere. I’ve never seen them before. I don’t think the parts are even available for you, even if you wanted to use their pump.” – ID #3

“And [washing parts] takes longer than washing your hands. So sometimes I felt like I was sort of holding up the [bathroom] sink.” – ID #11

Strengths of Existing Resources Participant discusses the strengths of UW’s existing lactation spaces when prompted by question from interviewer.

“The process for getting the code was effective and pretty streamlined. They sent me a new code at one point a few months in. So it's clearly like organized on that end...Umm, I mean they exist. [Laughs] So I guess that's good.” – ID #2

Key Challenges Participant discusses their "key challenges" (greatest challenges to expressing milk on campus) when prompted by question from interviewer.

“The biggest challenge for me is time. So getting to the pumping room, setting up or needing to move if there isn't space setting up, pumping, tearing down, packing everything up, walking back to. It's just a lot of time.” – ID #1

Appendix A: Observation Checklist

Building Name:

Room Number:

Additional Description:

Date of Observation:

Observer:

Minimum Legal Requirements:

Standard	Yes	No	Notes
Shielded from view (visual privacy)			
Free from intrusion (privacy lock)			
Not the bathroom			

Additional American Institute of Architects Recommendations:

Physical Space Standards	Yes	No	Notes	AAAQ
7' x 7' or equivalent size				Quality
Safe location				Accessibility
Located in area suitable for preparation and storage of food				Quality/ Acceptability
Lock indicates "vacant/occupied"				Acceptability
Walls reach up to the structure/ceiling				Acceptability
Sound-dampening materials (carpet, curtains, wall coverings)				Acceptability
Electrical outlets proximal to chair and table/counter (within 3 feet)				Quality
Adequate lighting				Quality

Warm room temperature				Quality
Adjustable, in-room thermostat				Quality
Calming environment				Quality/ Acceptability
Clean environment				Quality/ Acceptability
Labeled as Lactation/Quiet Space				Accessibility

Furniture Standards	Yes	No	Notes	AAAQ
Chair is present				Quality
Chair is in good condition (i.e. clean, functional)				Quality
Chair material is washable				Quality
Chair is comfortable and supportive				Quality
Table/counter is present				Quality
Table/counter is in good condition (i.e. clean, functional)				Quality
Table/counter is washable				Quality
Table/counter is in convenient location to chair				Quality
Storage space/lockers for pumping supplies				Quality

Amenities Standards	Yes	No	Notes	AAAQ
In-room sink				Quality
Nearby sink				Quality
Refrigerator				Quality
Breast pump				Quality

Amenities (cont.)	Yes	No	Notes	AAAQ
Trash can				Quality
Coat rack/hooks				Quality
Mirror				Quality
Paper towels				Quality
Disinfectant wipes/spray				Quality
Hand sanitizer				Quality
Soap				Quality
Telephone				Quality
Microwave				Quality
Educational/Resource/Reading Materials				Quality

Accessibility Standards	Yes	No	Notes	AAAQ
Accessible location for all				Accessibility
Schedule posted				Availability/ Accessibility
Privacy/in-use sign				Acceptability
Requires key				Acceptability/ Accessibility
Walk-ins welcome				Availability/ Accessibility
Requires orientation				Availability/ Accessibility
Requires reservation or scheduling				Availability/ Accessibility

Other Notes:

Appendix B: Interview Guide

Participant Demographics Questions:

- A. Are you an undergraduate, graduate, or professional student?
- B. Beyond being a student, please describe any other roles that you have on the UW campus.
 PROBE: TA or RA? UW employee? Extracurricular activities or leadership?
- C. Combining all of your UW commitments, how many hours do you spend on campus each week?
- D. Do you work off-campus? If so, how many hours each week?
- E. How many children do you have?
- F. Among your children, how many have received breastmilk from you?
- G. Among your children, how many continued to receive breastmilk after you returned to school?
- H. For your most recent child, when did you go back to school?
 SUBQUESTION: How old was your child at the time?
- I. Are you still pumping breast milk on campus? If you have stopped, how old was your child?
- J. Is your child still receiving your breast milk (in any quantity)? If you have stopped breastfeeding in general, how old was your child when they completely weaned?
- K. Rank your level of agreement with this statement: "I have adequate social support for breastfeeding at home." (Select one)

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

L. How do you identify your race and ethnicity?

American Indian/Alaska Native Asian Black/African American

Native Hawaiian/Pacific Islander White Hispanic/Latino

Other: _____

M. How old are you?

18-24

25-29

30-34

35-39

40-44

45+

Interview Questions:

1. On this campus map, will you please show me where you have ever pumped your breastmilk? Where do you most often pump? Where do you most often study and attend class?

Circle anywhere that she has pumped. Draw a star where she most often pumps. Draw a triangle over the place where she most often studies. Label A, B, C, D, etc.

SUBQUESTION: About how long does it take you to get from here to here? *Indicate the places on the map where the participant most often pumps and most often studies.*

IF THE PRIMARY PUMPING SPACE IS NOT THE SPACE CLOSEST TO HER PRIMARY STUDY STATION, ASK THIS SUBQUESTION: It appears that there are other lactation spaces closer to your primary study location. Why do you usually travel to this one that's further away?

SUBQUESTION: This map is available on the UW Benefits Office website. Had you seen this map before our meeting today?

2. Tell me about why you decided to continue breastfeeding after returning to school.
3. Did you consult with anyone on-campus when you were making your plans to continue breastfeeding after returning to school? If so, who?

PROBES: Professors? Employers? Student Services? Hall Health? Academic Advisors?

4. What steps were required to gain access to the place that you usually pump? Do you think that these steps were reasonable?
5. Do you feel that your classmates and professors are supportive of your decision to continue breastfeeding your child? Could you give me an example?
6. How flexible is your school schedule to use the lactation spaces on campus? How flexible are the spaces' availability?

PROBE: Is there always a space available when you need to pump your breast milk? How long have you had to wait? How often have you had to wait? Do you need to schedule the time in advance? What happens if your schedule needs to change?

SUBQUESTION: Do your professor(s) place restrictions on your pumping breaks?

7. Although it does not apply to students, you may have heard that the ACA (Obamacare) requires employers to provide a “place, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public, which may be used by an employee to express breast milk”. Considering the spaces where you pump on campus, do you think that they meet these requirements?

Provide a written form of this statement to refer to as I ask the question

8. Tell me about the physical spaces where you pump breastmilk or breastfeed your children? What are they like?

PROBES: Indicate spaces on the map from Question 1. Refer to letter assignments.

SUBQUESTIONS: What do they look like? What amenities are included? Are they comfortable? Are they functional? Would it be appropriate to prepare food there (sanitary)?

9. Reflecting on all of the spaces that you have ever lactated on campus, what works well with the UW's current set of lactation resources and spaces?

10. What are some of the key challenges that you face when pumping breast milk on campus?

SUBQUESTION: How could these challenges be resolved?

11. What has helped you to be successful with pumping breast milk on campus?

12. What information or suggestions would you share with other breastfeeding people who are preparing to return to school?

13. Are there any other aspects of your experience with lactating on campus that you would like to share?