

Asking about adverse childhood experiences (ACEs) in health visiting

Findings from a pilot study

Authors: Katie Hardcastle and Mark A. Bellis



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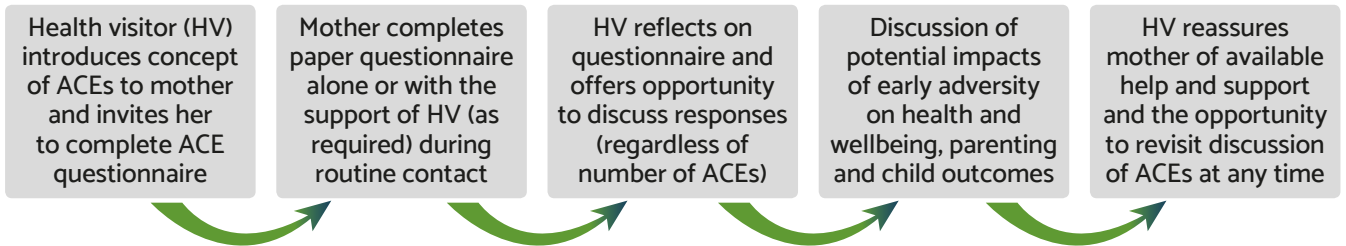
Asking about adverse childhood experiences (ACEs) in health visiting

Findings from a pilot study

ACE enquiry during routine contact was piloted by all health visitors across Anglesey in 2017/2018 with mothers aged 18 years and over. Mothers were invited to complete an ACE questionnaire at either 6 weeks or 6 months post-delivery.

Process of ACE enquiry

90% of mothers that were asked agreed to take part in ACE enquiry (n=321)



Prevalence of ACEs among mothers

0 ACEs 47%
 1 ACE 26%
 2-3 ACEs 16%
 ≥4 ACEs 11%



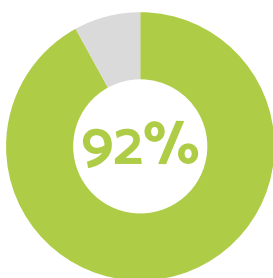
43%

of mothers with ACEs said it was the first time they had told a professional service about these experiences^a

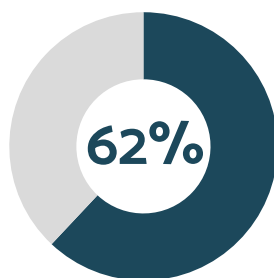


Maternal health and wellbeing^b

I feel like I belong in my community^c

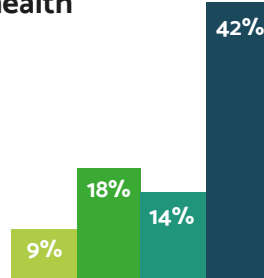


0 ACEs

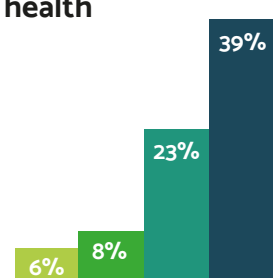


≥4 ACEs

Low self-rated physical health



Low self-rated mental health



0 ACEs 1 ACE 2-3 ACEs ≥4 ACEs

The process of ACE enquiry was designed and delivered by Betsi Cadwaladr University Health Board with the support of a consultant facilitator appointed by Cynor Sir Ynys Môn Isle of Anglesey Council. Public Health Wales were commissioned to independently evaluate this pilot.

^a n=116 mothers disclosed at least one ACE; ^bMothers completed a series of questions about health and wellbeing at 6-months post-delivery ^cPercentage of mothers agreeing/strongly agreeing (likert scale: other possible responses were not sure; disagree; strongly disagree).

What did mothers say?^d

Agreed/strongly agreed that ACE enquiry in health visiting is...

Acceptable **91%**

Important **81%**

Two out of three mothers agreed/strongly agreed that...



The **help and support** I received was **improved** because the HV understood my childhood better

What did health visitors say?^e

Mothers recognised the value of ACE enquiry, which made them think differently about how they wanted to parent their child(ren)

Initial concerns about time, capacity, the need for onward referral and causing upset were not realised during the pilot

HV would welcome a more flexible approach that allows them to use their professional judgement as to when to enquire and with which caregivers

ACE enquiry considerably improved understanding about families, challenged assumptions and created a greater openness and enduring trust in relationships with mothers

“The stand out take home point for me is how well placed we are as health visitors and how privileged we are for parents to confide in us and for us to be able to support them.”

The structured ACE questionnaire supported privacy in the home and was a quick and efficient method for gathering relevant information on families



Potential impacts of early ACE enquiry

At six month post-delivery differences between mothers who had early (6 weeks after delivery) or later (6 months after delivery) ACE enquiry included:

	Enquiry @ 6 weeks		Enquiry @ 6 months
Self-rated physical health as low	36%		50%
Emotional support available from friends & family	93%		73%
Family engaged in community	60%		36%

However in this pilot sample these differences did not reach statistical significance.

Conclusions:

- The evaluation finds considerable support for the feasibility and acceptability of ACE enquiry in health visiting for both service users and practitioners.
- Larger scale research and evaluation is now needed to test developments in ACE enquiry in other health visiting services. This should include consideration of the most suitable timing of enquiry and longer term outcomes for mothers and children.

^d Service user feedback questions completed at 6-months post-delivery; response options on a likert scale (strongly agree; agree; not sure; disagree; strongly disagree). ^e Qualitative findings from practitioner feedback focus group following implementation (n=10 participants).

Executive Summary

Background

A global evidence base describes the impact of traumatic early life experiences and chronic stress on health and wellbeing outcomes throughout the life course. Adverse childhood experiences (ACEs), which include being the victim of abuse or neglect and being exposed to harmful factors in the household environment, can influence the way that an individual understands and interacts with the world. This can present particular challenges for attachment and parenting, with a risk that ACEs and their detrimental impacts may be passed on to the next generation. Enquiry about ACEs by health visitors (HVs) presents a potential opportunity for mothers to discuss their own experiences of childhood trauma in the context of a trusted relationship and for health professionals to provide help and support in promoting positive maternal health, wellbeing and parenting outcomes and breaking cycles of adversity.

This report explores key findings from the evaluation of an initial pilot of ACE enquiry delivered with mothers during early engagement with health visiting services across Anglesey, North Wales. The pilot took place between October 2017 and July 2018 and engaged 321 mothers in a supportive, ACE-informed discussion about childhood adversity and its impacts on health, wellbeing and parenting. Using qualitative and quantitative data, this report considers the feasibility and acceptability of ACE enquiry in health visiting from both the service user and the practitioner perspective. The report is not intended as a comprehensive exploration of the association between maternal ACEs and health and wellbeing outcomes for the mother or the child. Instead, it aims to provide initial insight into the potential impact of ACE enquiry on the mother-health visitor relationship. As a secondary objective it examines some important maternal outcomes at six months post-partum, with a view to considering how these and other outcomes could be used to evaluate future ACE enquiry approaches at scale.



Implementation

The pilot project was a local initiative driven and supported by Betsi Cadwaladr University Health Board and Cyngor Sir Ynys Môn Isle of Anglesey County Council. A consultant facilitator was appointed by the local authority to provide training, materials and support to the health visiting service and co-produce the model of ACE enquiry with a core group of frontline staff and managers. ACE enquiry was delivered at either six weeks (early; the ACE group) or six months post-partum (late; the Comparison group). A total of 321 ACE enquiries were completed; an overall uptake rate of 89.9% of eligible mothers.

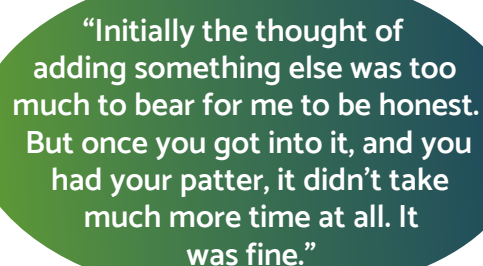
Key findings

ACEs and their relationship with maternal health and wellbeing

- Just over half of all mothers had experienced at least one ACE and one in ten had experienced ≥ 4 ACEs. Overall ACE prevalence in this sample was marginally lower than the prevalence among reproductive age women identified in earlier national household surveys in Wales.
- A strong significant relationship was found between increasing ACE count and poor self-rated physical and mental health at six months post-partum. Whilst 8.7% of mothers with no ACEs rated their physical health as low, this rose to 41.7% among those with ≥ 4 ACEs. Similarly, self-rated mental health was reported as low for 5.6% of mothers with no ACEs and 39.1% with ≥ 4 ACEs. Although mothers with a higher number of ACEs reported more frequent GP use and were more likely to have attended A&E or spent a night in hospital in the previous six months, these differences did not reach statistical significance.
- Overall mothers with and without ACEs reported being very happy and confident in their role as a parent and feeling close to their children. Reported levels of support from family and friends were also very high (>90.0%) across the whole sample. Whilst overall at six months post-partum as few as 7.6% of all mothers said they felt overwhelmed by the responsibility of being a parent, over twice this level (15.4%) of those with ≥ 4 ACEs reported feeling overwhelmed (difference not statistically significant). Just over a quarter of mothers (26.9%) suggested that caring for their child(ren) takes more time and energy than they have to give, which did not differ by ACE count.
- At six months post-partum, a significant cumulative association was found between ACE count category and community belonging, with over 90.0% of those with no ACEs feeling like they belonged in their community, compared with only 61.5% of those with ≥ 4 ACEs. A similar significant dose response relationship was found for community involvement, with only half of mothers with ≥ 4 ACEs reporting getting involved with their children in different activities in the community. This was in spite of findings suggesting no difference (by ACE count category) in the perceived importance of socialising with others.

The practitioner experience

- HVs reported using a general discussion of the nature and prevalence of ACEs to introduce the concept to service users, valuing the prompts and materials that were provided by the consultant facilitator to aid this process. The routine model of delivery (i.e. by all HVs and with all mothers) was considered instrumental in embedding change and supporting service user engagement.
- Practitioners welcomed the use of a structured written ACE questionnaire, which was considered similar to other methods of assessment currently used, and was commended for: standardising the enquiry process; allowing greater privacy in the home context; and providing a quick and efficient means of gathering a vast amount of information on families.
- Lack of flexibility in the timing of enquiry was considered a key barrier to delivery due to emerging challenges achieving privacy in the home setting. However, HVs were confident that, within a more flexible model, using their professional judgement would allow them to successfully identify the most appropriate time to enquire on a case-by-case basis. HVs also highlighted the importance of adapting models of enquiry to be inclusive of fathers and other primary caregivers.

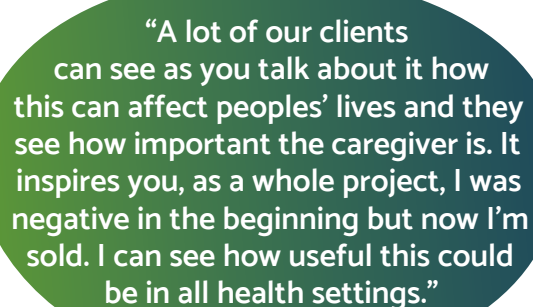


“Initially the thought of adding something else was too much to bear for me to be honest. But once you got into it, and you had your patter, it didn’t take much more time at all. It was fine.”

- Although HVs expressed having considerable initial concerns about the time needed to deliver the ACE enquiry process and provide additional support, the potential for mothers to become upset or distressed and the detrimental impact of this on the longer-term practitioner-service user relationship, they were unanimous that these concerns were not realised during the pilot. Whilst there were instances of continued discussion over subsequent appointments, generally HVs reported that mothers did not want to talk about their own experiences in any great detail and no service user required onward referral or further or alternative specialist support following ACE enquiry.
- There was a strong consensus among practitioners that ACE enquiry considerably improved their understanding of families (beyond what would already be known), challenged their assumptions and created a greater openness and enduring trust in their relationships with service users. ACE enquiry was framed as an investment for the future, with families knowing that there is someone there to listen or help with future concerns.

The service user experience

- Service users were described by HVs as recognising the motivations for and value of asking about childhood adversity and understanding the links between early childhood and later health. ACE enquiry was reported to have made mothers think differently about how they wanted to parent their child(ren), based on how they themselves had been parented. No service user explicitly expressed upset or discomfort, or showed any other signs of distress throughout the pilot.
- Service users reported overwhelmingly positive views of ACE enquiry, with over 90% considering it acceptable to provide information about childhood experiences to a HV and over 80% believing it important for HVs to have this understanding. Over two thirds of mothers felt that the help and support they received from the HV was improved as a result of the ACE enquiry process, regardless of their actual history of ACEs. For 43.1% of those with ACEs, enquiry in health visiting offered an opportunity to discuss these experiences with a professional for the very first time.



“A lot of our clients can see as you talk about it how this can affect peoples’ lives and they see how important the caregiver is. It inspires you, as a whole project, I was negative in the beginning but now I’m sold. I can see how useful this could be in all health settings.”

The potential impact of ACE enquiry

- Outcomes were compared across mothers who experienced early and late enquiry to offer tentative suggestion as to the possible impacts of early ACE enquiry on later health and wellbeing. Across all ACE count categories, mothers who received early ACE enquiry rated their physical health at six months post-partum more positively than their late enquiry counterparts (differences not statistically significant). Mothers in the early enquiry group with a higher number of ACEs (2-3 or ≥ 4) also reported receiving more help and emotional support from family and friends (differences not statistically significant).
- When asked to consider how much they and their children currently get involved in different activities in the local community, among mothers with ≥ 4 ACEs those who received early enquiry reported greater community involvement at six months post-partum when compared with late enquiry mothers. Thus, 60.0% of mothers with ≥ 4 ACEs who experienced early ACE enquiry reported community involvement, compared with only 36.4% of late enquiry mothers in the same ACE count category (differences not statistically significant).

Conclusions

This pilot evaluation finds considerable support for the feasibility and acceptability of ACE enquiry in health visiting for both service users and practitioners. Using a structured questionnaire to gather information on ACEs was identified as a simple, manageable and non-intrusive process that allowed service users to retain control over disclosure and the extent to which they shared information with their HV. Consequently, increasing HVs knowledge of the childhood experiences of mothers was considered to improve both their understanding of families and the overall quality of their relationships with service users, suggesting that HVs are very well placed to offer mothers the opportunity to disclose and discuss ACEs. With a tentative suggestion of modest improvements in health, family support and community involvement following early enquiry, results support further study of ACE enquiry as a mechanism to support wellbeing and prevent the intergenerational transmission of childhood adversity.

Recommendations

Overall recommendation:

- Positive findings from this pilot should be used as a platform to share learning and advocate for further larger scale research and evaluation to test developments in ACE enquiry in other health visiting services.

Further research should:

- Further explore the feasibility and acceptability of ACE enquiry at different points in the service user pathway, including the evaluation of non-routine models which allow health visitors to determine when is most appropriate to ask about ACEs.
- Explore the feasibility and acceptability of models that extend to fathers and other caregivers, examining key challenges for ensuring confidentiality, privacy for enquiry in the home and data protection.
- Consider, by using larger and more representative sample(s), the relationship between ACEs and different maternal and child outcomes, and the potential association between ACE enquiry and any subsequent improvement in these variables.
- Develop a better understanding of, and evaluate, the nature and content of discussions about ACEs between practitioners and service users, using qualitative methods to explore with mothers the potential therapeutic benefit of enquiry and its influence on their parenting practices or behaviours and relationship with practitioners.
- Undertake detailed and longer term follow-up with service users to understand the impact that ACE enquiry may have on their health, wellbeing and parenting.
- Evaluate the impact of ACE enquiry on child health, development, behaviour and wellbeing outcomes presently assessed by HVs in universal care.

1. Introduction

This report summarises the key findings from a pilot study on enquiry about adverse childhood experiences (ACEs) by health visitors in Anglesey, North Wales. As the first known report of its kind in the UK, it is intended to explore proof of concept for retrospective ACE enquiry with mothers during their early engagement with health visiting services. Therefore, it focuses on the feasibility and acceptability of ACE enquiry from both the practitioner and service user perspective. The report may be of interest to those with responsibilities for the commissioning, design or delivery of health visiting and other early years support, or anyone with a more general interest in the response to ACEs and the prevention of intergenerational harms to health and wellbeing they can cause.



A global evidence base describes the impact of traumatic early life experiences and chronic stress on health and wellbeing outcomes throughout the life course. Adverse childhood experiences (ACEs) are commonly thought to include all forms of child abuse and neglect where the developing child may be a direct victim, as well as harmful factors in the wider environment in which they grow up, such as living with a household member who abuses alcohol (Box 1).

A nationally representative household survey in Wales in 2017 identified that 50% of adults (aged 18-69) had experienced at least one ACE, with 14% experiencing four or more ACEs in the first 18 years of life (Box 1; [1]). The neurobiological, immunological and hormonal changes that result from the body's adaptation to early exposure to prolonged stress increase the risk of a range of poor health outcomes [2,3]. These include health harming behaviours such as smoking and substance use [4], disease development (e.g. cancer and heart disease in later life) and even early mortality [5,6]. Individuals exposed to ACEs are also more likely to experience mental health problems such as depression and anxiety [7], as well as reporting lower self-reported mental wellbeing [8].

Box 1. Defining Adverse Childhood Experiences (ACEs) and their prevalence among adults in Wales

ACE	Prevalence	
Child maltreatment	Verbal abuse	20%
	Physical abuse	16%
	Sexual abuse	7%
	Physical neglect	4%
	Emotional neglect	7%
Childhood household included	Parental separation	25%
	Domestic violence	17%
	Mental illness	18%
	Alcohol abuse	13%
	Drug use	6%
	Incarceration	4%

Source: Hughes et al., 2018 [1]

1.1 The impact of ACEs on parenting and intergenerational cycles of adversity

When children are exposed to ACEs this can influence the way they come to understand and interact with the world, including how they form and maintain relationships and respond to stress. This can present particular challenges later in the life course when these children become parents themselves. It is thought that both mothers and fathers may copy the behaviours they observed in their own parents [9,10], with higher rates of adversity found in children whose parents suffered ACEs [11]. The health and lifestyle effects of ACEs may limit parents' ability to effectively meet the physical and emotional needs of their children. Mothers exposed to ACEs are at increased risk of depressive symptoms both in pregnancy and post-partum [12,13] and associations have been found between ACEs and parenting stress [14]. ACEs have further been associated with particular challenges for mothers in the early post-partum period, including difficulties breast feeding [15] and insecure infant attachment [16]. Evidence also suggests that adults with ACEs may experience reduced social support [17]; a key protective factor for both parental and child wellbeing [18].

Maternal and paternal ACEs have been shown to negatively affect the social-emotional functioning of children, with studies highlighting a greater risk of child developmental delays at 6, 18 and 24 months of age [19]. Children of parents with ACEs are more likely to experience behaviour problems such as hyperactivity [20] and parental ACEs are also associated with poor child health status and the early presentation of conditions such as asthma [21]. These relationships may be mediated by factors such as maternal mental health disorders [22]. However, research suggests that parents who display factors such as maternal sensitivity¹ and responsiveness may negate the impacts from their own ACEs on their children [19,23]. With the notion that intergenerational cycles can be broken by promoting family resilience and positive parenting behaviours, a strong case is made for identifying and providing additional support to parents who have experienced adversity, both to mitigate the health effects in adults, and to prevent ACEs in future generations.

1.2 Asking about ACEs in healthcare settings

Although there is persuasive evidence of the impact of childhood adversity on later health and wellbeing, wider determinants of health are often not the focus of healthcare provision [24]. Health practitioners report feeling ill-prepared to discuss childhood trauma, not having the time to devote to these discussions and fearing re-traumatising service users by opening a 'can of worms' when there are limited or no resources to then support identified need [25-27]. However, whilst adults may generally find it difficult to disclose these childhood experiences, initiating such conversations with parents can capitalise on their desire to break cycles of adversity and provide a better life for their children, in which health professionals are viewed as an important source of support [28].

Emerging evidence from the USA provides initial insights into the acceptability of asking about parental ACEs in primary care. For example, findings from a large paediatric practice in Oregon suggest that ACE enquiry at four-month well child visits improved empathy and communication between practitioners and patients, and created a safe space for mothers to talk about the parenting challenges they faced as well as disclosing other traumatic experiences (e.g. nine mothers spontaneously revealed domestic violence in subsequent visits [26]). In a study screening for ACEs in standard prenatal care (16-23 weeks gestation) in North Carolina, over 90% of women reported feeling very or somewhat comfortable completing an ACE questionnaire. Findings also revealed that for almost three quarters of expectant mothers, this was the first time they had been asked about

¹ Maternal sensitivity refers to behaviours such as providing gentle and affectionate touch and being aware of the signals of the infant.

ACEs by a healthcare professional. Whilst clinicians reported seeing the value of ACE enquiry, this was contingent on having resources to provide to women and strong linkages with behavioural health and psychiatry services [27]. Initial findings from the USA also tentatively support ACE enquiry in the home setting, with over 95% uptake to a pilot delivered by nurses and social workers supporting low income families in Minnesota [29]. Parents suggest that ACE enquiry may be beneficial for identifying immediate family needs, facilitating access to external resources and promoting supportive parent-provider relationships for the benefit of addressing future needs. However, some apprehensions have been expressed by parents about the relevance of focusing solely on parental ACEs (rather than the child's ACEs) for supporting healthy child development [28].

Concerns about approaches that attempt to screen for ACEs and identify thresholds for intervention, particularly in the absence of effective evidence-based interventions and responses for those that screen positively are well documented [30]. However, universal ACE enquiry during the critical period of development in the first few years of life can provide health professionals with an opportunity to apply a trauma-informed approach to wider conversations with parents. This can include addressing the impact of childhood experiences and resilience factors on their health and wellbeing as well as that of their children [31]. Such an approach may serve as an intervention in itself by providing a positive therapeutic benefit for parents drawn from simply being given the opportunity to talk about childhood adversity with a trusted health professional. Further, allowing health services to understand underlying causes of health and behaviour may help in structuring more appropriate help and support within existing provisions [32]. Recent work elsewhere in the UK offers tentative support to the acceptability and feasibility of a similar approach to asking about child adversity with adults in a general practice context [33]. However, to date, the application of ACE enquiry to early years settings has not been empirically tested in the UK, where state supported healthcare is provided to children and families by health visiting services.

1.3 The health visiting context and the ACE agenda in Wales

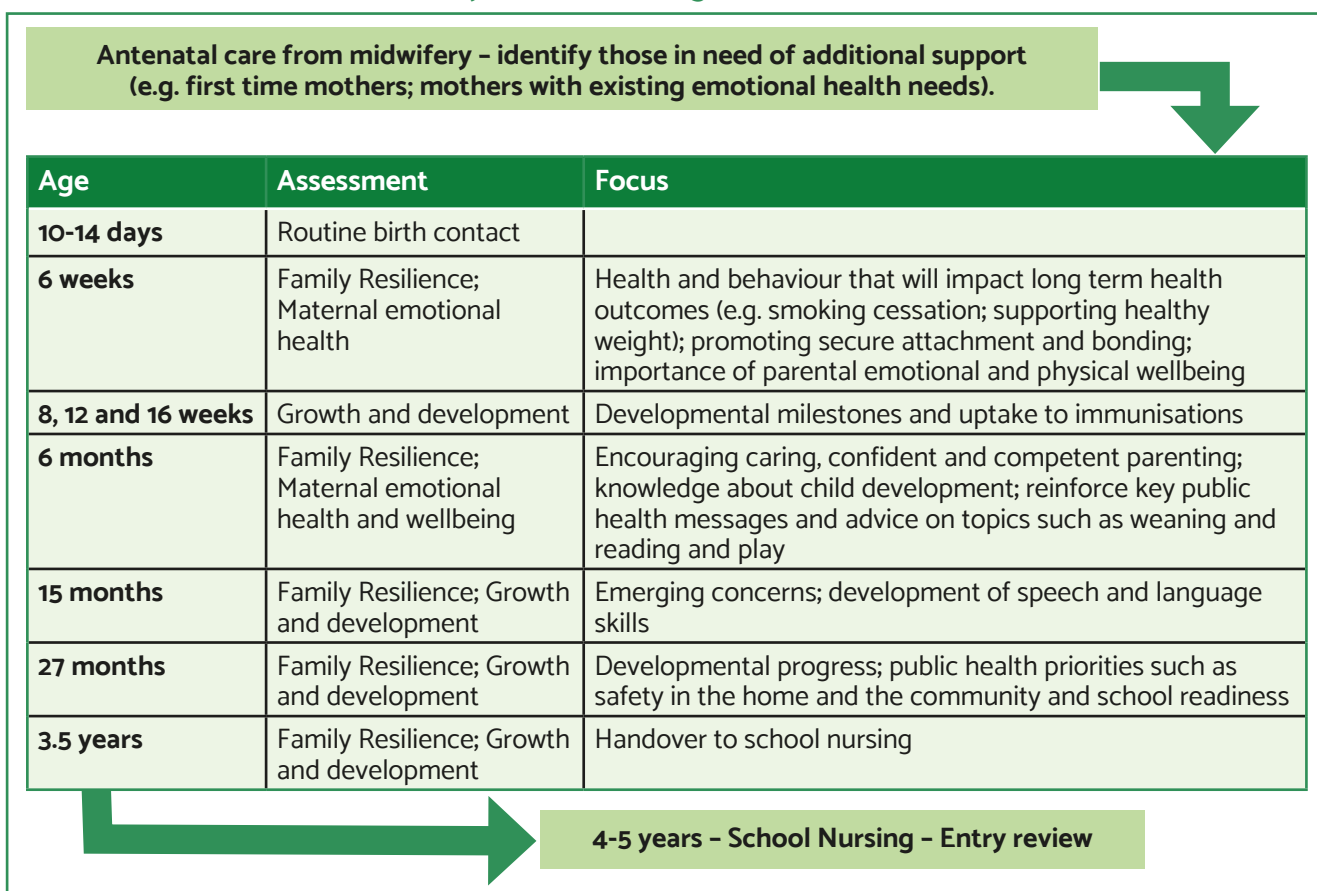
In Wales, care and support is provided to children and families during the early years through the Healthy Child Wales Programme (HCWP). Introduced in October 2016, universal contacts in HCWP are based on three areas of intervention: screening; immunisation; and monitoring and supporting child development (surveillance). HCWP is based on the principle of progressive universalism and therefore outlines a key provision of support for all families irrespective of need, as well as directing more intensive support for the most vulnerable families. Key overarching priorities of HCWP include: promoting bonding and attachment; supporting positive parenting; and promoting maternal and family emotional health and resilience. Universal scheduled contacts within HCWP begin antenatally and continue until a child is seven years old, under the responsibility of the local health board and delivered by midwifery, health visiting and school nursing services. Health visiting contacts are summarised in Box 2. The Flying Start Programme² also provides an enhanced health visiting service to those families living in the most deprived areas of Wales. Key public health messages are conveyed to families as a core component of HCWP.

The first national ACE survey conducted by Public Health Wales (PHW) in 2015 began to describe the problem of ACEs in the population and explore the impact of these early life experiences on important outcomes in adulthood [34]. Since then, this work has been used to unite Welsh Government, public services and the voluntary sector behind a national agenda that aspires to prevent ACEs, build

2 Flying Start is a Welsh Assembly Government funded programme supporting children aged 0-3 years in the most disadvantaged communities in Wales. It brings together a number of agencies (e.g. health visitors, childcare providers, play and language coordinators) to develop the child's language, emotional, physical and social skills in preparation for school.

resilience and provide support those who have already suffered from their effects. Health visitors remain uniquely positioned in that they see all new mothers with their babies in the home. Their public health focus has traditionally been to take a holistic approach to the mother and infant’s health, with an emphasis on physical health, but increasingly, through the HCWP they are focusing on family resilience and social and emotional health. Health visiting in Wales therefore presents an opportunity to advance the ACE agenda and innovate to mitigate the effects of ACEs on parents whilst concurrently working to prevent their future occurrence in children. In 2017-18, this opportunity was recognised by Cyngor Sir Ynys Môn Isle of Anglesey County Council and Betsi Cadwaladr University Health Board (BCUHB) leading to a pilot programme of ACE enquiry within health visiting in Anglesey, North Wales. PHW were commissioned to provide an independent evaluation of this pilot.

Box 2. Universal contacts in Healthy Child Wales Programme (HCWP)



1.4 Evaluation objectives

This evaluation had the following primary objective:

- 1 To explore with both service users and practitioners the feasibility and acceptability of conducting enquiry for ACEs within universal health visiting provisions.

Secondary objectives were:

- 2 To identify the prevalence of ACEs in a sample of mothers engaged with health visiting services and begin to explore the association between ACEs and some key health, wellbeing and parenting outcomes.
- 3 To consider potential impacts of ACE enquiry on mothers at six months post-partum (e.g. changes to the service user-practitioner dialogue and health, wellbeing and parenting outcomes) and develop understanding as to how these and other outcomes may support the evaluation of ACE enquiry at scale.

2. Methods

2.1 Design and delivery of the pilot

The pilot project was a local initiative driven and supported by BCUHB and Cyngor Sir Ynys Môn Isle of Anglesey County Council. PHW were asked to provide an independent evaluation of the work but were not involved in the design and delivery of the ACE enquiry process. For information, the intended model of delivery conceived by BCUHB is summarised in Box 3.

Engagement and organisational readiness

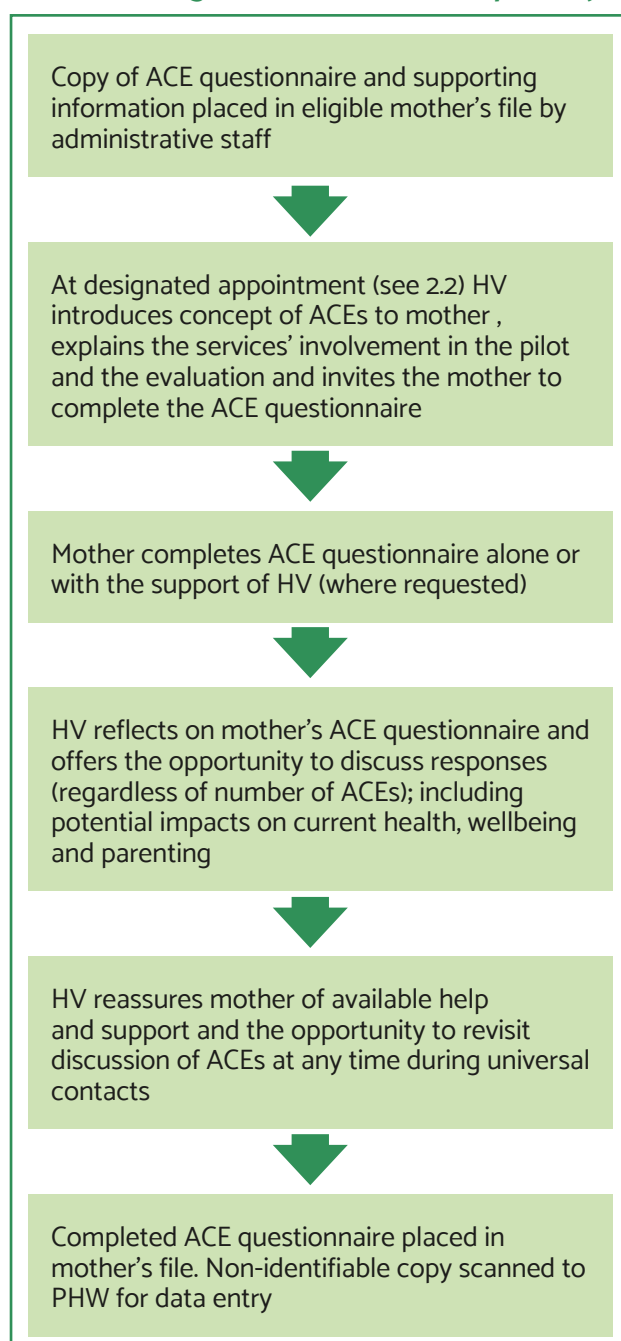
The pilot was supported by a consultant facilitator (CF) appointed by the local authority. During an initial meeting, CF and members of the senior management team for the HV service scoped out the broad design of the project. This was followed by a co-production meeting that engaged a core group of frontline staff in refining the ACE enquiry model and identifying and developing materials for service users and staff.

Training and materials

Training for all health visitors (N=14) was provided by CF. Initial training took place over a single three and a half hour session and introduced HVs to the purpose and rationale of ACE enquiry before outlining the delivery of the four-stage enquiry process: explain, ask, listen and close. One week prior to the beginning of implementation, the CF delivered a further one and a half hour refresher session to support staff confidence going in to the pilot and respond to any queries or concerns. A feedback session took place after the first month of delivery to address any challenges arising.

The CF produced a short leaflet for service users that introduced the concept of ACEs and explained the rationale for enquiry. A practitioner guide/ toolkit was produced to support the information provided in training and summary information was condensed into a brief prompt card for HVs to refer to in practice. The CF also provided a directory of local and national support services

Box 3. Model of delivery of ACE enquiry in health visiting (intended service user pathway)



that HVs could use to signpost families if required. Mothers completed a paper ACE questionnaire in English or in Welsh. This questionnaire was based on the Centres for Disease Control and Prevention (CDC) short form ACE questionnaire [35] but was adapted³ for use in ACE enquiry by the CF. These questions retrospectively asked mothers about adverse experiences occurring in their childhoods. The questionnaire did not consider the current ACE exposure of the infant.

Eligibility criteria

All mothers living in Anglesey (Box 4) who were engaged with the service between October 2017 and July 2018 (see Figure 1 and section 2.3) and were aged 18 years and over were invited to participate in the ACE enquiry pilot.

Box 4. Health visiting service in Anglesey

Health visiting services in Anglesey serve a population of approximately 70,000 across an island covering an area of 715 km². Whilst covering both rural and urban areas and representing diverging levels of deprivation (including people from the most to the least deprived 10% in Wales), the island's population is ethnically very homogenous with <1% black and minority ethnic residents. Based on 2017 figures from Stats Wales, HVs in Anglesey will likely support around 650 babies each year. The proportion of births in Anglesey to older mothers (≥40 years of age) is marginally less than the national average for Wales, whilst the rate of births to younger mothers (≤19 years of age) is marginally higher. The percentage of low weight and pre-term births (<37 weeks) also fall below national averages. Four geographic areas of the island provide Flying Start services.²

2.2 The evaluation framework

The evaluation framework designed by PHW is summarised in Figure 1 and utilised a range of quantitative and qualitative data collection methods to primarily assess the feasibility and acceptability of this model of ACE enquiry for HVs and service users. This pilot does not provide a comprehensive study of the associations between maternal ACEs and health and wellbeing outcomes (see limitations, outlined in section 4.1, for discussion of why and the absence of information on potential confounders). However, to begin consideration of the potential impact of ACE enquiry on the relationship with and outcomes for mothers, two cohorts were examined. For one cohort, ACE enquiry took place early in the engagement with the HV (at six weeks post-partum - the ACE Group) and for the other ACE enquiry took place later (at six months post-partum - the Comparison Group). Both were assessed at six months post-partum in order to compare differences in having had ACE enquiry close to delivery date or six months after birth⁴. A target of 400 completed ACE enquiries (200 in each cohort) was agreed between all partners on the basis of providing an adequate sample for basic statistical analyses.

3 Adaptations included condensing the sexual assault items into one question, and changing the responses from frequency based (e.g. never, sometimes, often) to simple dichotomous yes/no responses.

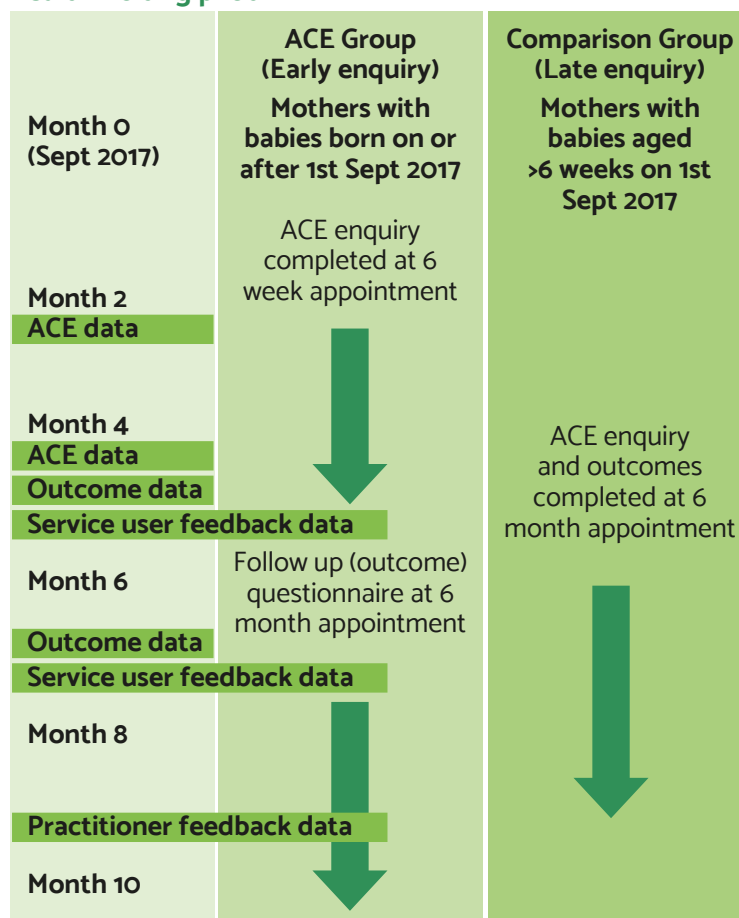
4 For all individuals evaluation assessments were always delivered after ACE enquiry had occurred.

2.3 Service user data – ACE data, outcome data and service user feedback

Sample and procedure

All mothers aged 18 years and over consulting with the HV at either their six week appointment (ACE group) or six month appointment (comparison group) during the implementation period were initially invited to complete an ACE questionnaire. More details of this process are provided above in section 2.1 and Box 3. All those who completed the ACE questionnaire and engaged with a HV in a discussion about ACEs were also invited to complete a further anonymous pencil and paper outcomes (health, wellbeing, parenting) and service user feedback questionnaire, either during that same appointment (for the comparison group) or later at their subsequent six month appointment (the ACE group). Questionnaires were placed in families’ files in advance at the beginning of the pilot and introduced to mothers by HVs following completion of the other (standard) tasks and assessments required during that appointment (see Box 2). Service users completed the questionnaires alone or with the support of the HV (if requested) and completed questionnaires were placed in the service user’s file and later scanned to the research team by the service administrator. ACE and outcomes questionnaires did not contain any personal identifiable information but were linked using unique numerical codes. The service did not provide any other additional data on families.

Figure 1. Evaluation framework for the ACE enquiry in health visiting pilot



Service users completed the questionnaires alone or with the support of the HV (if requested) and completed questionnaires were placed in the service user’s file and later scanned to the research team by the service administrator. ACE and outcomes questionnaires did not contain any personal identifiable information but were linked using unique numerical codes. The service did not provide any other additional data on families.

Measures

ACEs

Questions adapted from established ACE questions from the Centers for Disease Control and Prevention short ACE tool [35] and used extensively in previous research [1,5] were used to measure childhood exposure to forms of abuse and household dysfunction. Mothers responded yes or no to experiencing each of the 10 ACEs during the first 18 years of life. The total number of ACEs experienced was summed and this resultant variable was split into the following four ACE count categories for the purposes of analysis: 0 ACEs; 1 ACE; 2-3 ACEs; ≥4 ACEs. Critically, these categories were selected for consistency with previous empirical research and are intended only to illustrate potential differences in outcomes by number of ACEs. These categories do not represent thresholds for experiencing negative impacts of ACEs and have not been identified as having any practical application for screening or intervention. Thus, all mothers in this pilot were engaged in a discussion about early adversity and parenting regardless of their number of ACEs.

Health and wellbeing outcomes, health service use and parenting

Mothers were asked to describe their current physical and mental health using a series of faces representing a scale of poor, OK, good and excellent. These variables were dichotomised into high (good and excellent) and low (poor and ok) physical/mental health. Mothers were also asked a series of questions about their frequency of personal use of health services over the past six months. This included how many times they had visited a General Practitioner (GP) or attended an Accident and Emergency (A&E) department as a patient and how many times they had stayed overnight in hospital. Overall frequencies for A&E attendance and hospital stays were dichotomised into 0 and ≥ 1 . Frequent GP attendance was calculated using 1 standard deviation above the mean (≥ 4 attendances in six months).

Five items taken from the Parental Stress Scale [36] and commonly used in the evaluation of parenting support programmes (Incredible Years; Attentive Parenting Survey <http://www.incredibleyears.com/for-researchers/measures/>) were used to assess mothers' confidence and experiences of parental stress. Mothers responded to statements such as 'I am happy in my role as a parent' using a likert scale from strongly disagree to strongly agree. Responses were dichotomised to yes (agree/strongly agree) and no (not sure/disagree/strongly disagree) for each construct (see Appendix 1). Items exploring community belonging and support were included from the Resilience Centre Adult Resilience Measure [37] and a number of other items concerning family support and community involvement were asked at the request of local practitioners (Appendix 1). All such items used the same likert scale as above and were dichotomised to yes/no responses for the purposes of analysis.

Service user feedback

Mothers were further presented with a series of statements with likert-scale responses (strongly agree; agree; neither agree nor disagree; disagree; strongly disagree) that were designed to assess their views as to the acceptability and perceived importance of the ACE enquiry process. For those in the ACE group who received ACE enquiry at six weeks, the impact of being asked these questions on their relationship with the HV was also explored. For the comparison group only, a further item considered whether they felt that it would've been helpful for the HV to ask questions about their childhood earlier than the six month appointment. In both groups, those who disclosed ACEs were also asked to identify if this was the first time they had told a professional service (i.e. not their friends and family) about these childhood experiences.

Data analysis

Questionnaires were analysed using basic frequencies. Bivariate statistics (Chi-squared or Chi-squared for trend) were used to explore associations between ACEs and outcome variables and to compare outcomes across the two cohorts. Statistical analyses were conducted in SPSS v24.

2.4 Practitioner feedback

Sample and procedure

Following the pilot implementation, a focus group was conducted with practitioners to gain their feedback on:

- The objectives and the implementation of ACE enquiry in health visiting;
- Perceived changes in practice during and following ACE enquiry;
- Initial impacts of ACE enquiry on service users and staff;
- Barriers and challenges to the use of ACE enquiry in the HV setting;
- Suggestions for successful future implementation.

Ten practitioners took part in the focus group discussion: eight enquiring HVs and two service managers. This convenience sample was derived based on staff available for the duration of the allocated session. The focus group took place during normal working hours at a local community venue and was facilitated and recorded by the lead researcher. All participants provided informed consent. Semi-structured questions were used to direct the discussion, which lasted approximately 60 minutes. It is important to note that HVs were not directly observed during the pilot. Therefore, any insight into the actual implementation of ACE enquiry, the nature of discussions with service users and fidelity to the ACE enquiry model and process, comes from practitioner feedback and one item of anonymous service user feedback only (see 2.2)⁵.

Data analysis

The transcript from the focus group was analysed manually for coding and thematic analysis. Particular attention was paid to instances where practitioners had consensus or were in disagreement and views were compared and contrasted with service user feedback responses (section 2.3).

5 Question: The help and support I received was improved because the health visitor understood my childhood better. Response options: strongly agree, agree, neither agree nor disagree, disagree, strongly disagree.

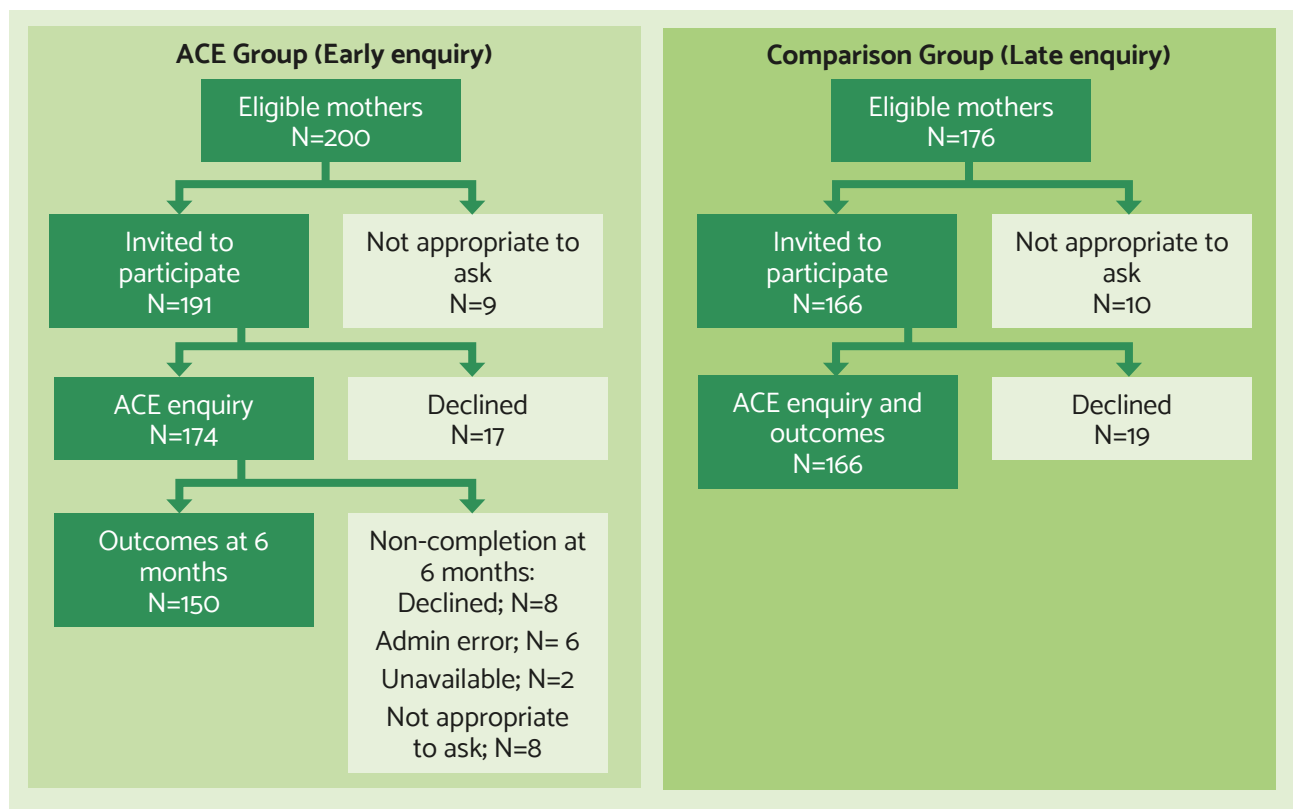
3. Results

3.1 Implementation

The ACE enquiry pilot began in October 2017 when the first cohort (the ACE group; September 2017 births; see Figure 1) reached their six week appointments. A rolling recruitment process followed, with the last six week enquiry taking place in early April 2018. ACE enquiry with the comparison group (six month appointment) took place between November 2017 and March 2018. Across the entire pilot, ACE enquiries were completed with 321 mothers. A flow diagram of study participation is shown in Figure 2. The overall uptake rate was 89.9% (of eligible mothers during appointments that were considered suitable by the HV). Uptake did not differ significantly between the two cohorts ($X^2 = 0.635$; $p = 0.426$).

Across both groups, very few service users declined to take part in the pilot (Figure 2). Although service users were not required to provide reasons for non-participation, where reasons were spontaneously volunteered, these are described in practitioner feedback (see section 3.3). For 4.5% (n=9 out of 200) of eligible six week appointments and 5.7% (n=10 out of 176) of eligible six month appointments, HVs determined that it was not appropriate to deliver ACE enquiry. Reasons for this are also explored in more detail in section 3.3. Overall, 13.8% of those in the ACE group that completed ACE enquiry at six weeks did not provide follow-up/outcome data at six months (Figure 2). However, of these, only eight mothers were presented with the opportunity but actively declined participation.

Figure 2. Flow diagram of service user participation in the ACE enquiry pilot



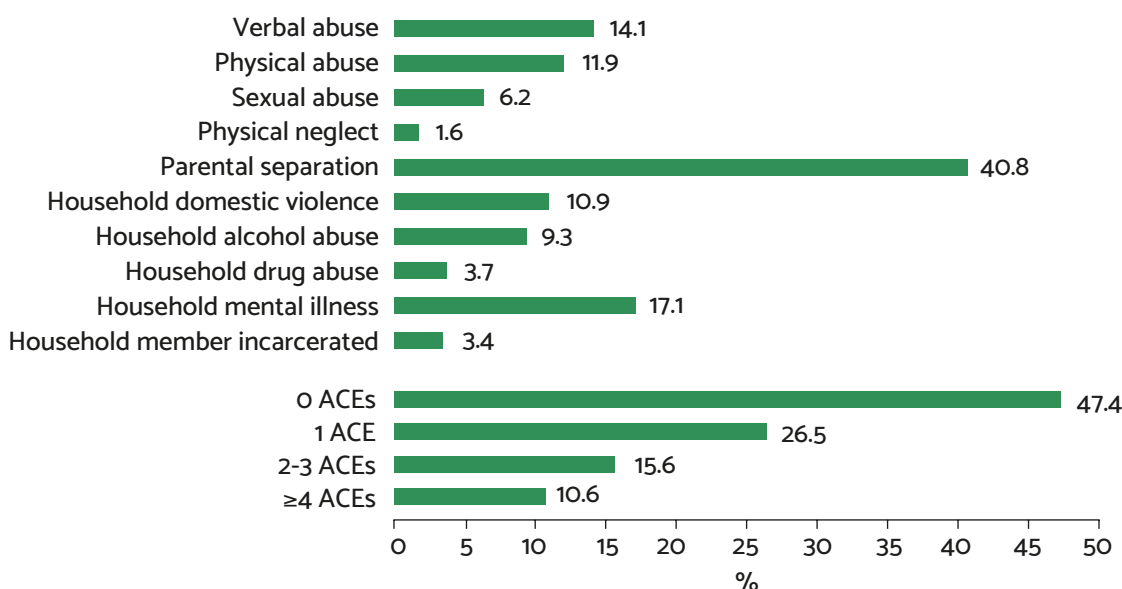
3.2 ACEs and their association with health, wellbeing and parenting

The following section provides some initial insights into the sample of mothers involved in this pilot evaluation and the feasibility of collecting additional data on health and wellbeing during the six-month post-partum visit. Tentative associations between ACEs and a selection of health and wellbeing outcomes are explored based on available data, acknowledging the unexamined impacts of other potentially relevant variables (see limitations outlined in section 4.1).

3.2.1 ACE prevalence

Just over half (52.6%) of all mothers had experienced at least one ACE and one in ten had experienced four or more during the first 18 years of life (Figure 3). The prevalence of individual ACEs ranged from 1.6% of mothers experiencing physical neglect, to 40.8% experiencing parental separation (Figure 3). Compared with previous research of the general adult population in Wales collected via self-selected household surveys, overall ACE prevalence was marginally lower among this sample (10.6% vs. 17.5%, ≥ 4 ACEs; [1]⁶).

Figure 3. Prevalence of individual ACEs experienced and total number of ACEs



3.2.2 Health and service use

At their six month appointment, mothers in both groups were asked to rate their current health. Across the whole sample, 15.0% of women rated their overall physical health as low and 12.9% rated their mental health as low. A strong significant cumulative relationship was found between ACE count and low self-rated health (physical health: $X^2(\text{trend}) = 12.309$, $p < 0.001$; mental health: $X^2(\text{trend}) = 23.631$, $p < 0.001$; Figure 4). Thus, the prevalence of low self-rated physical health rose from 8.7% in those with no ACEs, through to as much as 41.7% in those with ≥ 4 ACEs.

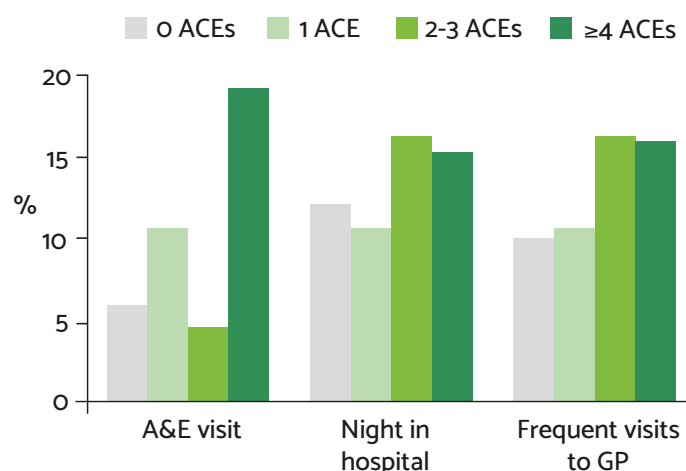
Figure 4. Percentage of service users reporting low self-rated physical and mental health, by ACE count category



6 Compared with a sub-section of females in the general population sample of reproductive age (18-49 years).

Mothers were also asked to identify if/how many times they had utilised different healthcare provisions in the previous six months. Although A&E visits did not show the same stepwise relationship with ACEs and differences did not reach statistical significance ($X^2(\text{trend}) = 2.289, p = 0.130$), mothers with ≥ 4 ACEs reported the highest A&E attendance (19.2% of mothers; Figure 5). Relationships were found between increasing ACE count (≥ 2 ACEs) and overnight stay in hospital and frequent GP attendance (≥ 4 times in six months), but again these failed to reach statistical significance ($X^2(\text{trend}) = 0.395$ and 1.443 respectively, $p > 0.05$; Figure 5).

Figure 5. Percentage of service users reporting high health service use, by ACE count category



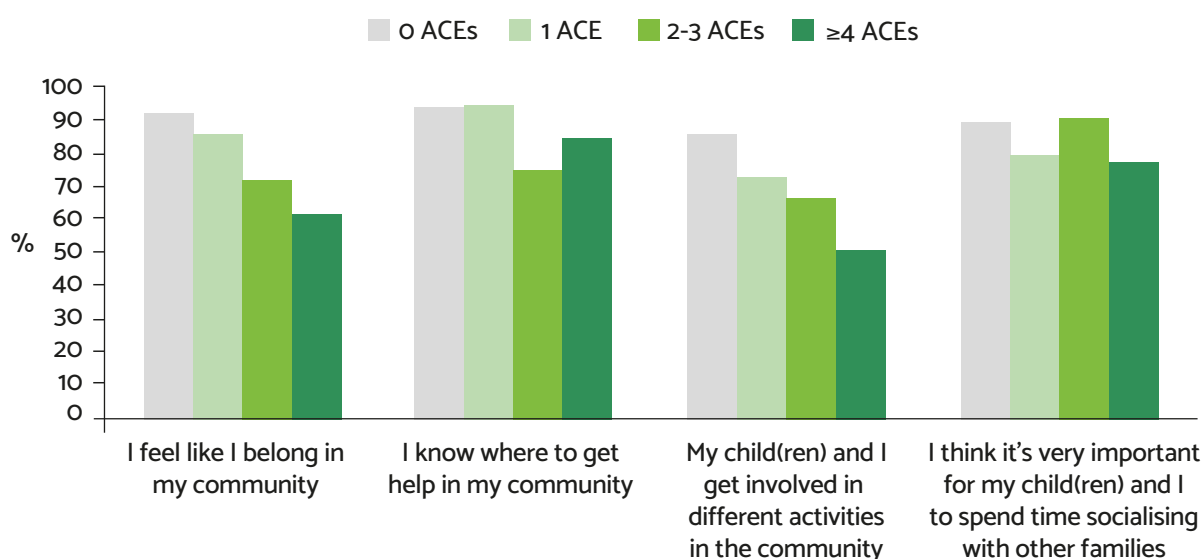
3.2.3 Parenting and family support

Mothers completed a series of measures at six months post-partum referring to their personal experiences as parents and the help and support they receive from others. Generally, responses were extremely positive, with 100% of mothers indicating that they are happy in their role as a parent and feel close to their children, and 98.6% reporting feeling confident as a parent. The vast majority of mothers also responded positively regarding the support of family and friends; with 91.4% indicating that their family and friends really try to help them and their children and 93.8% suggesting that they get appropriate emotional support from these familial and social networks. Whilst overall at six months as few as 7.6% of mothers said they felt overwhelmed by the responsibility of being a parent, over twice this level (15.4%) of those with ≥ 4 ACEs reported feeling overwhelmed, although the difference between ACE count categories failed to reach statistical significance ($X^2(\text{trend}) = 1.315, p = 0.252$). Just over a quarter of mothers (26.9%) suggested that caring for their child(ren) takes more time and energy than they have to give. However, there was no difference in responses by ACE count category ($X^2(\text{trend}) = 0.685, p = 0.408$).

3.2.4 Belonging and community involvement

Mothers were also presented with a series of positive statements concerning their involvement with the wider community (Figure 6). A significant cumulative association was found between ACE count category and community belonging ($X^2(\text{trend}) = 20.732, p < 0.001$), with over 90% of those with no ACEs feeling like they belonged in their community, compared with only 61.5% of those with ≥ 4 ACEs. A similar significant dose-response relationship was found for community involvement ($X^2(\text{trend}) = 18.116, p < 0.001$), with only half of mothers with ≥ 4 ACEs reporting getting involved with their children in different activities in the community. Whilst the relationship between ACE count and knowing where to get help in the community was also significant ($X^2(\text{trend}) = 9.373, p = 0.002$), this did not show the same downward trend, with mothers with 2-3 ACEs reporting the lowest understanding of where to get help. The relationship between ACE count and perceived importance of socialising with other families was not significant ($X^2(\text{trend}) = 6.169, p = 0.229$).

Figure 6. Percentage of service users agreeing/strongly agreeing with positive statements about belonging and community involvement



3.3 Feasibility and acceptability for practitioners

Practitioner feedback focused on three core themes: the process of delivery; the impact of ACE enquiry on practice; and the benefits of understanding about mothers' childhood adversity for the development and maintenance of the practitioner-service user relationship. Within each of these themes, various subthemes were identified and are outlined below. Emphasis is given to those themes in which HVs reported a consensus or those which prompted more detailed or enthusiastic discussion.

3.3.1 Reflections on the process of delivery

Practitioners described their experiences of implementing ACE enquiry and the strengths of the approach conceived by BCUHB and the CF. They were also able to reflect on the challenges they faced during the pilot and consequently any circumstances in which actual delivery may have differed from intended implementation. Based on these experiences, issues for the development of ACE enquiry approaches in this setting were explored.

Initiating the ACE discussion:

- Conversations with mothers were commonly structured around raising awareness of the nature, prevalence and impact of ACEs. This general understanding was then used as a platform for helping families to recognise ACEs and understand the impact of these experiences in early life on key concepts such as attachment and parenting.
- The provided prompts and supporting materials were welcomed by HVs to initiate conversations about ACEs. Many HVs reported initially 'setting the scene' for the ACE enquiry discussion at the earlier 14-day visit, identifying with mothers that ACEs had become a new framework for discussing health, wellbeing and parenting.
- HVs recognised that it was important to ground the ACE enquiry process in the context of a pilot study or current change in practice as many mothers had experienced the service before or would have some knowledge of the prior experiences of other mothers and therefore may feel anxious about being 'singled out' by/for enquiry.

"I prepare them from the first visit... Don't get upset or worry that I'm doing things or asking things that maybe your friends haven't been asked. The process is different now. So then the ACE form is considered one of the new things we do."

- The routine delivery of ACE enquiry (i.e. delivered by all HVs and with all mothers) was perceived by HVs to be instrumental in ensuring that changes in the content and delivery of appointments were truly embedded across the service and therefore understood and accepted by service users.

The use of a structured tool:

- HVs recognised that their core business involves discussing experiences and feelings with mothers and that service users are often asked to complete questionnaires or provide similar verbal or written information. Therefore, the process of completing the ACE questionnaire was not viewed as a considerable deviation from normal practice and was complementary to existing assessment methods.
- The use of a structured written questionnaire for gathering ACE information was also commended for standardising the enquiry process, allowing greater privacy in the home context (see below) and providing a quick and efficient means of gathering a vast amount of information on families (that may otherwise take a long time to establish).

“I think the ACE questionnaire is really useful. Regardless of their history, the choice to disclose is up to them. They are in control when they read the questions. They don't feel under pressure to explain, but they can if they want to.”

Privacy and the need for greater flexibility:

- Lack of flexibility as to when to enquire (i.e. intended delivery within designated appointments) was considered a primary barrier to service user engagement by all practitioners. On occasion it was reported that at the designated appointment, family members or friends were present in the home, and therefore the HV didn't feel it was appropriate to conduct ACE enquiry.
- However, HVs readily acknowledged that greater flexibility in delivery would easily help to overcome this barrier, as the HV would recognise the most appropriate opportunity to initiate a conversation about ACEs. Practitioners indicated that they would welcome the opportunity to use their professional judgement to implement ACE enquiry in this way.

“The mother's parents have been there at six weeks. There is often more family involvement at that time. I didn't feel it was appropriate then.”

Refining the ACE enquiry model and considerations for future implementation:

- HVs questioned the timing of ACE enquiry but opinion about improvement was unusually divided. Whilst some practitioners felt that these conversations about childhood should actually begin antenatally, others suggested that teachable moments may not arise whilst families are overwhelmed with the excitement of pregnancy or preparing for birth. Further, whilst some HVs argued that six weeks may be too early as they have not yet had the opportunity to build such a strong rapport with mothers, others suggested that the challenges of delivering assessments or structured conversations generally increase as the infant becomes more mobile, therefore earlier enquiry may be more feasible.
- Multiple instances were described in which fathers had asked to be involved in the ACE enquiry process or were perceived by HVs to be disappointed by their exclusion from the pilot. HVs discussed both the strengths and challenges of delivering family-level assessments (i.e. those that include both mother and father, or any other primary caregivers present in the home), with the overriding perception that it should be a matter of professional judgement for HVs to determine the most suitable contributors and methods of delivery (e.g. ACE questionnaires completed together or separately) on a case-by-case basis.



3.3.2 Understanding impacts on practice

Practitioners described how delivering ACE enquiry had influenced their practice, focusing in particular on how actual experiences of delivery differed from what they had expected prior to commencement.

Practitioner time and the needs of service users:

- Although HVs expressed having considerable initial concerns about the time needed to deliver the ACE enquiry process and provide additional support, the potential for mothers to become upset or distressed and the detrimental impact of this on the longer-term practitioner-service user relationship, they were unanimous that these concerns were not realised during the pilot.
- Although two instances were described in which more lengthy discussion did take place with service users following completion of the ACE questionnaire, HVs recognised that this can happen at any time in clinical practice and is fundamentally no different to dealing with any arising needs or concerns of mothers outside of the ACE enquiry pilot. Generally delivering the ACE enquiry process was not considered to be a burden on HV's time.
- HVs described instances in which discussions originating in the ACE enquiry process continued over subsequent appointments, however support was provided to these mothers within standard universal provisions. Although some mothers were signposted to national and local support services (via the materials provided by the CF; see section 2.1), no service user was reported by HVs to require onward referral or further or alternative specialist involvement following ACE enquiry.
- Overall practitioners suggested that mothers who disclosed ACEs generally did not want to talk about these experiences in any detail, often indicating that they had already received help and support in dealing with these issues (but see section 3.4).
- ACEs were perceived by HVs as providing a new framework for talking to parents that is consistent with/complements other prevailing national agendas (e.g. Family Resilience Assessment Instrument and Tool [FRAIT]).

“Initially the thought of adding something else was too much to bear for me to be honest. But once you got into it, and you had your patter, it didn't take much more time at all. It was fine.”

“The majority didn't want to talk about it really. They've usually resolved it, or already had support. Or at least they felt they had.”

Challenging assumptions:

- Practitioners described how they were often surprised by responses to the ACE questionnaire, with it not always being those mothers that they suspected that disclosed the highest number of ACEs. Therefore, they recognised that the ACE enquiry pilot had challenged some of their assumptions about service users and provided novel information.

3.3.3 The perceived benefits of ACE enquiry

Practitioners described how asking service users about their ACEs increased knowledge and understanding for both HVs and service users and had lasting impacts on the quality and nature of their relationship.

Understanding families:

- There was a strong consensus among practitioners that having knowledge of ACEs considerably improved their understanding of service users. Without direct enquiry and a structured questionnaire, it was felt that this information would remain unknown, or would only be established over years of involvement with the service, therefore not allowing the HV to use this understanding to provide appropriate support from the outset. ACE enquiry was seen as a discrete and efficient method for gathering this information that was under the direct control of the service user (who could choose whether or not to disclose).

“Most parents have accepted it [ACE enquiry] well. None of them have been distraught or negative about the questionnaires. I was surprised. I thought there would’ve been more declined questionnaires than there have been.”

Improved relationships with service users:

- HVs readily reported that the ACE dialogue created greater openness in their relationships with mothers. This was considered beneficial not just in the immediate term, but also in establishing enduring trust and ensuring that mothers felt more able to present with issues in future.
- ACE enquiry was therefore framed by HVs as an investment for the future, with families knowing that there is someone there to help, or even to simply just listen.

“A lot of our clients can see as you talk about it how this can affect peoples’ lives and they see how important the caregiver is. It inspires you, as a whole project, I was negative in the beginning but now I’m sold. I can see how useful this could be in all health settings.”

Potential positive impacts on service users

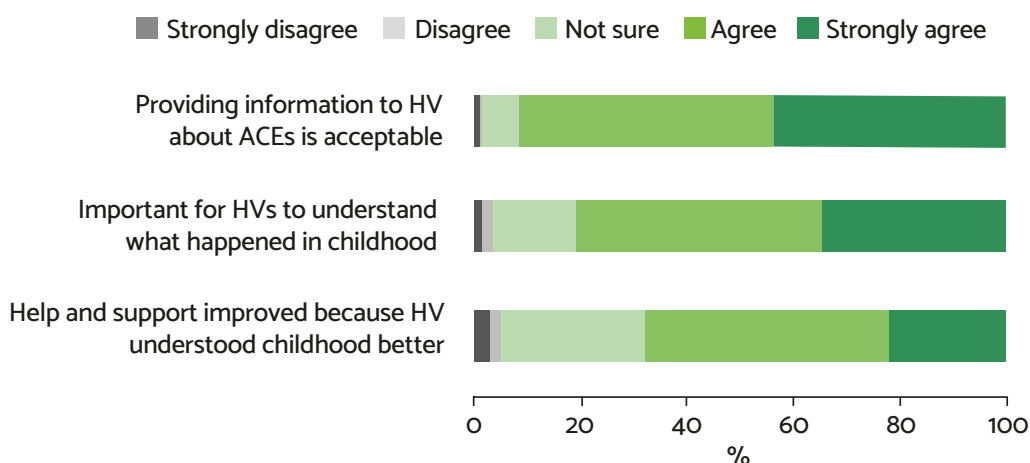
- HVs reported that no service user explicitly expressed upset or discomfort, or showed any other signs of distress throughout the pilot.
- Instead, service users were described as recognising the motivations for and value of asking about childhood adversity and understanding the links between early childhood and later health.
- ACE enquiry was reported by HVs to have made mothers think differently about how they wanted to parent their child(ren), based on how they themselves had been parented.
- In some cases, the discussion about ACEs was described as helping to bring to the fore issues that had already caused anxieties for mothers. Discussing these issues with the HV was thought to provide both reassurance and suggested positive actions. A further example was also provided of a mother who, through the ACE enquiry process, was supported by the HV in identifying that previous counselling received as a child in relation to issues with her parents may not have been sufficient. Now in a different stage of the life course and a parent herself, this service user subsequently looked to revisit some form of therapeutic intervention.

“The standout take home point for me is how well placed we are as health visitors and how privileged we are for these parents to confide in us and for us to be able to support them. We are so well placed.”

3.4 Service user feedback

Service user feedback questions were completed by 286 mothers; 89.4% of those who had received ACE enquiry. Generally service users reported overwhelmingly positive views of ACE enquiry, with over nine in ten (90.9%) agreeing or strongly agreeing that providing information to HVs about experiences during childhood is acceptable (Figure 7). The vast majority of mothers (80.9%) also agreed or strongly agreed that it is important for HVs to understand what happened in childhood and over two thirds (67.6%) reported that the help and support they received from the HV was improved because of ACE enquiry (Figure 7). Responses to all service user feedback items did not differ significantly by experience of ACEs (yes/no) or by ACE count category (0, 1, 2-3, ≥4 ACEs). Further, there was no difference in perceived acceptability or importance between those who experienced ACE enquiry early (six weeks) or later in their relationship with the HV (six months). Whilst half of mothers (51.0%) who received ACE enquiry at six months felt that it would be helpful for health visitors to ask these questions earlier, a further 38.8% were unsure of the most suitable timing for enquiry.

Figure 7. Percentage of service users agreeing or strongly agreeing with a series of positive statements about ACE enquiry in health visiting



Of the 116 respondents who indicated during feedback that they had disclosed one or more childhood adversity on the ACE questionnaire, 43.1% stated that this was the first time they had told a professional service (i.e. someone other than their friends and family) about these experiences. Views as to the acceptability ($X^2 = 1.148$, $p = 0.284$), importance ($X^2 = 1.410$, $p = 0.235$) and utility (i.e. help and support improved; $X^2 = 1.269$, $p = 0.260$) of ACE enquiry did not differ significantly by first disclosure (yes/no).

3.5 Exploring the initial impacts of ACE enquiry

To begin to explore the tentative impacts of ACE enquiry on service users, and develop learning for future evaluations at scale, the health, wellbeing and parenting outcomes outlined in section 3.2 were compared across mothers who experienced early and late enquiry. This was based on the premise that early enquiry at six weeks may allow HVs to work in a more ACE-informed way with service users and/or that the increased awareness of ACEs and their link with health and wellbeing outcomes among mothers may influence their attitudes and behaviours over the follow-up period. Analyses by all outcomes were stratified by ACEs to explore the potential for differential impacts by (extent of) childhood adversity.

Health and service use

Across all ACE count categories, mothers who received early ACE enquiry rated their physical health at six months more positively when compared with those who received late enquiry (Figure 8). For example, prevalence of low self-rated physical health ranged from just over a third (35.7%) of those with ≥ 4 ACEs and early enquiry, to half (50.0%) of those with ≥ 4 ACEs and late enquiry. However, the differences between enquiry categories failed to reach statistical significance.

Whilst the prevalence of ratings of poor mental health did not differ across enquiry categories for those with no ACEs, among those with ≥ 4 ACEs early enquiry was associated with marginally better self-rated mental health, although again these differences did not reach statistical significance. No differences were found between mothers receiving early and late enquiry and health service use outcomes over six months post-partum (A&E attendance; night in hospital; frequent GP use).

Parenting and family support

No significant difference was found in reported six months post-partum happiness and confidence in the parental role or negative feelings concerning the demands of parenting (more time and energy than I have to give; feeling overwhelmed) between those who experienced early and late ACE enquiry. Overall mothers reported high levels of emotional support from friends and family. However, whilst there was no difference by enquiry timing in those with 0 or 1 ACE(s), mothers in the early enquiry group with a higher number of ACEs (2-3 or ≥ 4) reported receiving more help and emotional support from family and friends at 6 months post-partum (Figure 9), although differences once again failed to reach statistical significance ($X^2 = 2.070$, $p = 0.150$).

Figure 8. Prevalence of low self-rated physical health by ACE count category and early vs. late enquiry

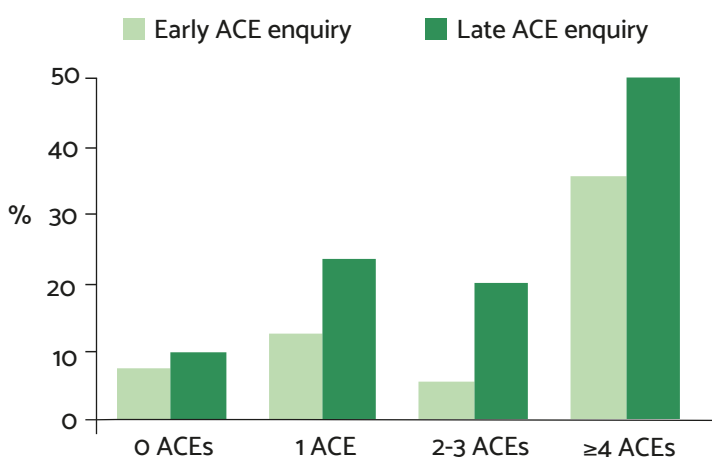
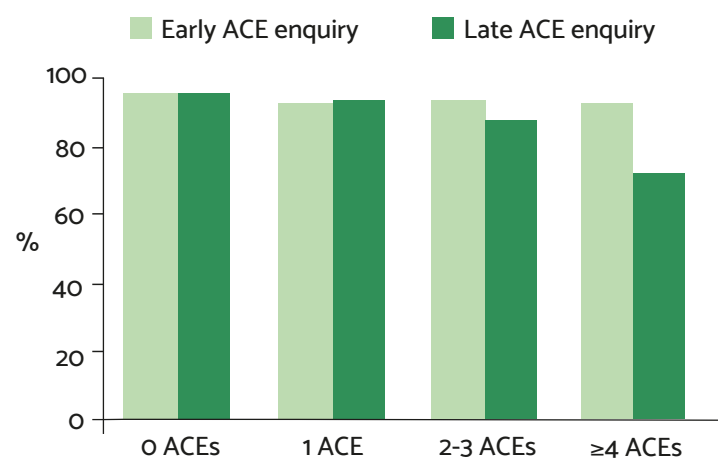


Figure 9. Association between timing of enquiry and self-reported emotional support from family and friends, shown by ACE count category



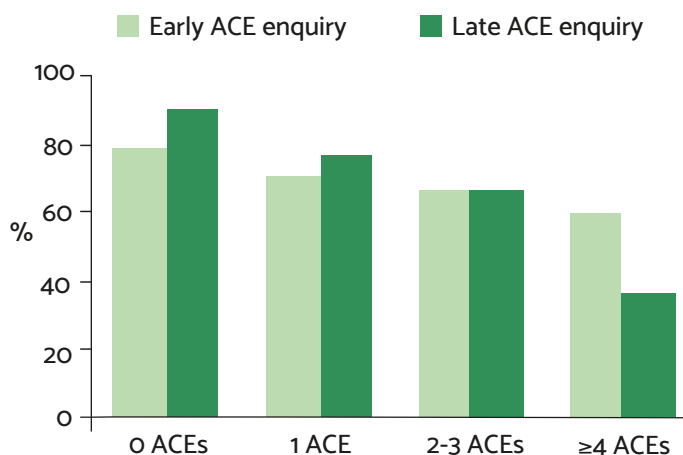
Belonging and community involvement

Across all ACE count categories, mothers who received early and late enquiry did not differ significantly at six months post-partum in: their reported sense of community belonging; their ability to identify help and support in the community; or the extent to which they felt that socialising with others was important.

When asked to consider how much they and their children currently get involved in different activities in the local community, among mothers with ≥ 4 ACEs those who received early enquiry reported greater

community involvement at 6 months post-partum when compared with late enquiry mothers. Thus 60.0% of mothers with ≥ 4 ACEs who experienced early ACE enquiry reported community involvement, compared with only 36.4% of late enquiry mothers in the same ACE count category (Figure 10). Whilst the difference in community involvement between early and late enquiry mothers with ≥ 4 ACEs failed to reach statistical significance ($X^2 = 1.418, p = 0.234$), the inverse relationship was found among those with 0 ACEs, with mothers who received late enquiry reporting marginally more community involvement.

Figure 10. Association between timing of enquiry and self-reported community involvement, shown by ACE count category



4. Discussion

Between October 2017 and July 2018, all HVs across Anglesey took part in a pilot programme delivering ACE enquiry with 321 mothers at either their six week or six month routine home-visit appointment. In a model that was developed collaboratively by the health board and the local authority and supported by an external consultant facilitator, HVs introduced the concept of ACEs to mothers before inviting them to complete a written ACE questionnaire. HVs would subsequently offer all mothers the opportunity to reflect on their responses to the ACE questionnaire, discussing the impact of early adversity on parental health and wellbeing as well as considering potential intergenerational effects for their children. There was considerable uptake to the ACE enquiry pilot, with as few as 36 service users declining to take part. Although all mothers aged 18 years and over were considered eligible for the pilot, on some occasions HVs felt that it was not appropriate to initiate a discussion about ACEs due to concerns about privacy and the presence of others in the home. However, this was a relatively rare occurrence, impacting around only 5% of eligible appointments.

Overall practitioners felt happy and confident to deliver ACE enquiry when provided with training and support, with initial reservations cited during engagement and training replaced with positive experiences during implementation of both the feasibility and acceptability of the enquiry model. Overall HVs reported that delivering ACE enquiry was not time consuming and did not markedly increase the need for support, onward referral or specialist involvement during the enquiry appointment or subsequent appointments. Whilst this is somewhat contrary to preliminary findings from the US which suggested that around one in six parents requested more support following enquiry (e.g. parenting classes; support groups; [26]), it is possible that this is a reflection of the stronger universal service in place in the UK. Rather than identifying additional need, overwhelmingly HVs in this pilot recognised the value of the ACE enquiry process for: raising awareness of the impacts of childhood adversity among families and across the community; building stronger and more open relationships with their service users; and significantly increasing their understanding of the history and needs of mothers and children in their care. Thus, enquiry was considered an investment for the future relationship with the mother and the family. HVs readily accepted that the information collected via the ACE questionnaire (and any subsequent discussions with service users) may have previously been entirely unknown or would only have been established organically (i.e. without directly asking) for some mothers and over a much greater length of engagement with the service. Thus, the ACE questionnaire was considered a suitable, non-invasive and efficient method for exploring childhood history early enough in the practitioner-service relationship to add value to their work with families. Rather than challenging their professional identity, the ACE enquiry process was favourably considered by HVs to complement existing requirements within the HCWP. Therefore, practitioners acknowledged that they as a service were exceptionally well placed to identify and support mothers with ACEs, and to potentially prevent ACE exposure in future generations.

... practitioners felt happy and confident to deliver ACE enquiry ...

The only resounding concerns reported by practitioners involved the flexibility of the piloted ACE enquiry model. For delivery in the home setting, HVs felt that a less prescriptive model allowing them to use their professional judgement in deciding when best to enquire in the service user pathway may provide a more feasible approach for effective engagement and avoid some of the challenges associated with establishing a private setting for enquiry. However, it was not clear to what extent this alternative decision-making process may increase the time needed to deliver enquiry or negatively impact practitioner confidence to deliver. Uncertainty as to the best timing for enquiry reflects findings elsewhere [29] and was also echoed by mothers, suggesting further work is needed to identify optimal time(s) for enquiry in the service user pathway. HVs also highlighted the importance of exploring appropriate methods for extending the model at practitioners' discretion to include ACE enquiry with fathers or other relevant primary caregivers resident in the home (e.g. grandparents).

...the vast majority of service users considered ACE enquiry in health visiting to be both acceptable...and important ...



According to service user feedback and consistent with emerging findings from other health settings [27,33], the vast majority of service users considered ACE enquiry in health visiting to be both acceptable (>90%) and important (>80%). Throughout the pilot there was no evidence of any harm or distress caused by ACE enquiry. In this sample, just over half of mothers had experienced at least one of the adversities captured in the ACE questionnaire, with one in ten experiencing four or more ACEs. This suggests a level of ACE exposure lower than previously identified for reproductive age adult women in Wales [1]. This may be due to a lower level of disclosure (i.e. women willing to disclose only two of their four ACEs), greater levels of declined participation in those with a higher number of ACEs, or may represent a difference in the population of Anglesey (compared with national prevalence). Positive service user feedback on ACE enquiry did not differ significantly by ACE count. In general HVs suggested that whilst mothers were happy to disclose ACEs, they often did not want to talk about their experiences in any detail, commonly suggesting that they had already received help and support in dealing with these issues. This would imply there are opportunities for positive involvement with and resilience development through the wider health and social care system even before individuals become new

mothers. However, this qualitative finding appears somewhat inconsistent with the quantitative finding that for just over 40% of mothers with ACEs, the HV pilot was identified as the first time they had told a professional or service about their experiences. One possibility is that the support referenced by mothers was received from familial and social networks only (i.e. rather than health and other services). Equally however, it is also possible that mothers may have been willing to disclose ACEs but subsequently (erroneously) suggested they had already had support to avoid any further exploration of these issues. Whilst there was no suggestion from HVs that this was the case, practitioners did recognise a key difference between questionnaire-based disclosure and willingness to actually vocalise these experiences. Further detailed research with service users would be required to identify and understand any barriers to a wider discussion about adversity (i.e. beyond written disclosure) between mothers and HVs.

Current findings underline the value of considering ACEs in healthcare provision by supporting associations between early adversity and later health outcomes previously identified in research with both the general population in Wales [4,6,8] and globally [5]. Generally mothers reported positive health outcomes at six months post-partum, but a strong relationship was found between greater exposure to ACEs and poorer self-rated physical and mental health (3.2.2). In spite of this, previously outlined relationships between ACEs and increased health service use [6] were not replicated with this sample. The possibility that regular scheduled contact with a health professional (i.e. through universal health visiting provisions) may mitigate some of the impact of ACEs on health service use in particular warrants further study. Aside from self-rated health, very few negative personal wellbeing outcomes were identified in this sample: mothers reported feeling happy, confident and supported, with little evidence of experiences of parental stress. With overall positive outcomes reported by mothers, there can be limited application of the potential predictive ability of ACEs in these



domains. However, beyond the family's immediate social context, experiences of childhood adversity were strongly associated with reduced feelings of community belonging and lesser involvement in the community. This was in spite of mothers across all ACE count categories recognising the importance of them and their children socialising with other families. If mothers' lack of engagement in the community is not due to a disregard of the value of involvement, this suggests those with a higher number of ACEs may be experiencing other barriers to engagement. Understanding these barriers may offer insight into the relevance of information on ACEs for structuring early years support around families.

One of the most pressing continued challenges within the emerging field of ACE enquiry in healthcare is understanding if and how such an approach may benefit service users [31]. As many as two thirds of mothers in this pilot reported a perceived improvement in the support they received as a result of the HV understanding their childhood better. This is consistent with practitioner feedback in which positive examples were provided of mothers appreciating the opportunity to talk about wider social determinants of health with the HV and/or reflect on how their experiences during childhood may influence them as parents. Interestingly, positive service user feedback did not differ by ACEs or first disclosure, suggesting that there may be a universal benefit of ACE enquiry even for those that have not had such experiences or do not need to identify additional support. This supports the perception of HVs that the process of enquiry resulted in overall improvements to the quality of their relationships with mothers. Although it was difficult to explore the impact of ACE enquiry in this pilot due to the homogeneity of wellbeing and parenting outcome data, findings tentatively suggest that for mothers with ACEs, self-rated health may marginally improve following ACE enquiry (see section 3.5). Whilst clearly to a considerably lesser degree here, this is conducive with research from the US that reported a 35% reduction in doctor office visits in the year following ACE enquiry [38] and recent findings from a pilot of ACE enquiry in general practice in England that suggested a reduction in both GP attendance and medication use in the three months after enquiry [33]. Findings also tentatively suggest an increase

One of the most pressing continued challenges ... is understanding if and how such an approach may benefit service users ...

in community involvement for mothers with a higher number of ACEs following early ACE enquiry (see section 3.5). Community involvement has been identified as a protective factor for a range of negative outcomes including common mental disorders [1,39] and perpetration of child maltreatment [40]. Whilst the transition to motherhood can be socially isolating [41], a range of opportunities typically exist in communities that can expand the social networks of mothers and young children, including preschools, community events, parents groups and playgroups. The mechanisms by which ACE enquiry may help mothers to identify and explore opportunities for community participation is therefore identified here as a key area for further research (see recommendations below).

4.1 Limitations

The following limitations should be considered when interpreting findings from this local pilot initiative:

- Due to the confidential nature of consultations between families and HVs, researchers were unable to observe the actual discussions that took place following completion of the ACE questionnaire. Therefore, it was not possible to directly examine fidelity to the intended model of delivery, the content of discussions supporting ACE enquiry, or service user behaviour/reactions. Current understanding of what was actually delivered to mothers during the pilot was derived from practitioner feedback and one item of service user feedback only. Therefore, it is very difficult to draw firm conclusions about the therapeutic benefit of the ACE enquiry process.
- Although uptake was very high and the number of decliners was accurately recorded by HVs, reasons for non-completion were not identified. No further data were available for those who declined participation or those for whom HVs determined it not appropriate to deliver ACE enquiry. Therefore, it is not possible to identify any common factors (e.g. the demographic profile) of either non-participating group that may provide insight into possible barriers to ACE enquiry.
- As it was agreed by the service and partners that the pilot should be as unobtrusive as possible and key priorities were to make the process inclusive, encourage engagement with mothers and limit the cognitive burden for staff and service users, data collection was anonymous and asked only a small selection of questions concerning the health and wellbeing of mothers at six months post-partum. Consequently, it was not possible to explore the experiences and outcomes of ACE enquiry by mothers' demographic (e.g. age, ethnicity), relationship (e.g. number of other children; marital status) or other behavioural/lifestyle factors (e.g. smoking; breast feeding), all of which may confound the relationship between ACEs and the outcomes of interest. For example, strong relationships have been identified between socioeconomic status (SES) and maternal and child outcomes [42]. It is not clear from this pilot how SES and other current circumstances in which the family are living may impact on: (a) willingness to engage in ACE enquiry; (b) the relationship between ACEs and health and wellbeing; or (c) the potential for ACE enquiry to mediate this relationship. These are therefore identified as key areas for future study.



- Whilst this is, to our knowledge, the first pilot of its kind in the UK and stands to advance our understanding of ACE enquiry in this new context, the relatively small sample size attained in this evaluation increases the likelihood of Type II errors in the analyses of service user data. For instance, the number of mothers with higher ACEs and any given health, wellbeing or parenting outcome of interest may be too small to produce a significant effect, thus resulting in a 'false negative' for instance with examination of differences in parental stress by ACE count. Further, the considerable homogeneity in the self-report data collected at six months post-partum (e.g. all mothers reported positive parenting outcomes) suggests that these particular variables may have limited predictive power for important child and maternal health outcomes. Whilst this highlights the importance of further exploring the predictive power of ACE data, it also suggests that there may be key outcomes of interest that were not considered in this evaluation.
- The data included here collected from mothers considers only a relatively short follow-up period (approximately four and a half months; from six weeks to six months post-partum). Thus, results do not provide reliable insight into: (a) the association between ACEs and child or maternal outcomes beyond the first few months of life; or (b) the long-term impacts of ACE enquiry, considering seasonal or other confounding effects.
- Whilst the two cohorts in this pilot study have been distinguished by timing of enquiry only, it is not possible to determine (due to lack of demographic data; see above) if the two groups are otherwise comparable. For example, there is evidence of month of birth effects for a range of child health outcomes (e.g. risk of multiple sclerosis; [43]). Due to the length of the pilot implementation, whilst the ACE group included mothers of infants born in September through to March, the comparison group included May to September births.
- Anglesey is a small island population consisting of many small communities that are demographically homogenous. The sample of mothers engaged in this pilot is unlikely to be representative of females across the wider population of Wales (e.g. see Box 4 for some comparisons to national birth data) and findings may not be generalisable to other communities (e.g. more rural areas or larger cities).

Conclusions and recommendations

Findings presented in this evaluation provide considerable support for the feasibility and acceptability of ACE enquiry in health visiting for both service users and practitioners. Using a structured questionnaire to gather information on ACEs was identified as a simple, manageable and non-intrusive process that allowed service users to retain control over disclosure and the extent to which they shared information with their HV. Consequently, increasing HVs knowledge of the childhood experiences of mothers was considered to improve both their understanding of families and the overall quality of their relationships with service users, suggesting that HVs are very well placed to offer mothers the opportunity to disclose and discuss ACEs. With a tentative suggestion of modest improvements in health and community involvement following ACE enquiry, results support further study of enquiry as a mechanism to support wellbeing and prevent the intergenerational transmission of childhood adversity.

Overall recommendation:

- Positive findings from this pilot should be used as a platform to share learning and advocate for further larger scale research and evaluation to test developments in ACE enquiry in other health visiting services which can address the research questions identified below.

Further research should:

- Further explore the feasibility and acceptability of ACE enquiry at different points in the service user pathway, including non-routine models which allow health visitors to determine when is most appropriate to ask about ACEs, considering the impact of this flexible approach on practitioners (e.g. time demands; confidence to deliver) and service users (e.g. uptake; acceptability).
- Explore the feasibility and acceptability of models of ACE enquiry in health visiting that extend to fathers and other caregivers. This should include an exploration of the key challenges for ensuring confidentiality, privacy for enquiry in the home and data protection.
- Consider, by using larger and more representative sample(s), the relationship between ACEs and different maternal and child outcomes, and the potential association between ACE enquiry and any subsequent improvement in these variables.
- Develop a better understanding of, and evaluate, the nature and content of discussions about ACEs between practitioners and service users; including assessing fidelity to any proposed model of delivery. Qualitative work with mothers should explore the potential therapeutic benefit of enquiry but also how such conversations with the HV may positively influence their parenting practices or behaviours (particularly for supporting community involvement) or their relationship with practitioners.
- Undertake detailed and longer term follow-up with service users and understand the impact that ACE enquiry may have on their health, wellbeing and parenting throughout the course of their engagement with health visiting and beyond this routine contact. This should also include an extended focus on child health, development, behaviour and wellbeing outcomes presently assessed by HVs in universal care.

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Appendix 1 – Measures and variables

	Question	Response options
Parenting/ maternal wellbeing measures	I am happy in my role as a parent	Strongly disagree; Disagree; Not sure; Agree; Strongly agree
	Caring for my child(ren) sometimes takes more time and energy than I have to give	
	I feel overwhelmed by the responsibility of being a parent	
	I feel close to my child(ren)	
	I feel confident as a parent	
	My family and friends really try to help me and my child(ren)	
	I get emotional support I need from my family and friends	
	I feel like I belong in my community	
	My child(ren) and I get involved in different activities in the local community	
I don't think it is very important for my child(ren) and I to spend time socialising with other families		
Service user feedback items	Overall I feel that providing information to health visitors about experiences during my childhood is acceptable	Strongly disagree; Disagree; Not sure; Agree; Strongly agree
	I think it is important that health visitors understand what happened in my childhood	
	The help and support I received was improved because the health visitor understood my childhood better	



Katie Hardcastle & Mark A. Bellis
Policy, Research and International Development Directorate
Public Health Wales NHS Trust
Clwydian House
Wrexham Technology Park
Wrexham LL13 7YP

Email: katie.hardcastle@wales.nhs.uk

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