Abstract

A population-level adolescent health survey has been a reliable source of information about the health and well-being of 12–19-year-olds in Western Canada since its introduction in 1992. However, the survey has never accurately measured child poverty, partially due to the complex social and geographical make-up of the region. The current study sought to adapt a model for developing a child-centric index of material deprivation which had been successfully used in the UK. To develop the BC Youth Deprivation Index, 25 focus groups, including three youth-led groups, were held with 300 adolescents aged 12–19 in urban, semi-urban, rural, and remote communities in each of the province’s five regions (North, Interior, Fraser, Vancouver Coastal, and Island). Participants in the focus groups created a 10-item index of the material items adolescents felt they needed in order to belong. The draft index was piloted with 297 BC adolescents aged 12–19. The index demonstrated good internal reliability and was correlated with measures of food insecurity and subjective well-being. The finalised index was completed by over 38,000 adolescents, and is available to policy makers and practitioners. The study outcomes support the value of meaningfully engaging young people in the process of measurement development.

Keywords Adolescent; deprivation · index · youth engagement
1 Introduction

Monitoring adolescent health and risk behaviours using population-based surveillance methods is important for identifying changing trends, developing priorities in prevention efforts, and for measuring progress toward public health targets (Saewyc et al., 2004). The population-level BC Adolescent Health Survey (BC AHS) has been a reliable source of information about adolescent health and well-being since its introduction in 1992 (Saewyc & Tonkin, 2008). The quinquennial survey is used by federal and provincial governments, school boards, and community agencies to set and evaluate policies and practices (Smith et al., 2019). However, despite repeated attempts, British Columbia (BC)’s largest and most comprehensive self-report health survey consistently failed to measure the extent of poverty and deprivation experienced by adolescents, resulting in policies and programs being developed without an effective evidence base about how poverty and deprivation can impact healthy development.

This lack of reliable data is particularly problematic due to the disproportionately high numbers of children in the province living in families with incomes below the poverty line (First Call, 2018). Recognising the limitations of existing adult-developed measures, the current study sought to engage young people (aged 12–19) to develop an accurate, relevant, culturally-appropriate index of deprivation for use on the 2018 version of the BC AHS. The BC Youth Deprivation Index would be used to consider the impact of deprivation on healthy development, and to guide the promotion of more informed policies and programs. The creation of this index was timely as events such as the Coronavirus pandemic and the Canadian public health crisis relating to the current toxic drug supply have highlighted the importance of understanding the interconnection between deprivation, inequity, and adolescent well-being (Zhang & Han, 2021). This paper outlines the process through which the BC Youth Deprivation Index was developed. One aim is to raise awareness of Youth Participatory Action Research (YPAR) as a methodology for developing such measures, while another aim is to highlight how this measure can be used to support Canada’s commitment to the UN Convention on the Rights of the Child.

Child poverty and deprivation in Canada.

In Canada, children are more likely to live in poverty than the overall population (UNICEF, 2016). Poverty during childhood has been shown to negatively impact children’s well-being, including their educational engagement and attainment; mental, emotional, and physical health; social and emotional functioning; serious injury rates; and nutritional intake (British Medical Association, 2017; Elgar et al., 2017; Klass, 2016; Pascoe et al., 2016). Rates of low birth weight, infant mortality, childhood mortality from accidental causes and respiratory disease, hospitalisation for injuries, obesity, mental illness and behavioural problems are also higher in Canadian children living in poverty (Phipps et al., 2006; Elgar et al., 2016). Additionally, the gap between young people living in the highest and lowest economic quintiles has widened, as has the gap in rates of low birth weight, access to health care, mental health challenges, and other markers of healthy development (Guttmann, 2001).

Poverty continues to be highlighted as one of Canada’s most important social determinants of child health (Canadian Pediatric Society, 2012; Sidebotham et al.,
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Despite 2019 marking the 30th anniversary of an all-party Canadian House of Commons resolution to end child poverty by the year 2000 (Society for Children and Youth of BC, 2020), the country continues to perform poorly on international markers of material well-being (Desapriya & Khoshpouri, 2018). There is therefore an urgent need to recognise and act on the interconnectedness of poverty, deprivation, inequity, and child well-being to ensure the development of informed policies and programs (Zhang & Han, 2021).

The majority of measures of poverty focus on household income and often create a dichotomy of whether a family is living in poverty or not living in poverty, based on a pre-determined income threshold. Such over-simplifications can prevent us from looking at the true impacts of deprivation, as they do not separate out the experiences of children and adolescents within a household or consider whether there is equitable distribution of resources and experiences within that household (Main, 2019; Zhang & Han, 2021). For example, children have educational, nutritional, and health needs that are different to those of adults, and that are not considered when focusing exclusively on household income (UNICEF, n.d.). As a result, UNICEF has advocated for a more multidimensional approach to measuring poverty in Canada which is sensitive enough to identify young people who may be experiencing material deprivation, despite living in a household that would not be considered to be in poverty based on household income measures (UNICEF, n.d.).

Children’s experiences of poverty are heavily influenced by the social context in which they are living, and include monetary and non-monetary factors, such as their sense of self in relation to their peers, and their access to resources and opportunities available to their peers (White, 2017). For young people, it is not necessarily the level of absolute poverty that has the greatest impact on their health outcomes but rather the disparity of deprivation that they experience (Guttmann, 2001).

Focusing on deprivation is particularly relevant in a BC context due to the province’s colonial history. This history has left many Indigenous young people experiencing significant material deprivation due to the intersectionality of inadequate federal and provincial funding, historic and ongoing systemic racism, and the associated intergenerational trauma (Tourand et al., 2016). A provincial progress report to the UN Committee on the Rights of the Child also noted the need to focus on deprivation by recommending the implementation of federal standards which would ensure all children experiencing material and social deprivation receive the supports they need to thrive (Society for Children and Youth of BC, 2020).

Defining deprivation.

In the 1980’s, Townsend introduced the term “deprivation” which he described as “an observable and demonstrable disadvantage relative to the local community or the wider society or nation to which the individual, family or group belong” (Townsend, 1987, p.125). He emphasised that deprivation is measured relative to a privileged group or social norm, and can differ between places and can change over time (Townsend, 1987). However, accurately measuring experiences of deprivation can be challenging (Terraneo, 2021), and can be particularly so when attempting to accurately capture children’s experiences (Main, 2019).

Canadian studies that have considered deprivation among adults have found an association with negative health outcomes and premature mortality. For example,
Saint-Jacques and colleagues (2014) found that despite the country’s universal health care system, deprivation accounted for approximately 40% of premature deaths in the province of Nova Scotia between 1995 and 2005. However, deprivation is not static and can look different across the life course as priority needs change. For example, access to quality health care, affordability of medication, and ability to cover heating costs may be key determinants of health for seniors but have little relevance for children, adolescents, and young adults (Dhongde, 2017).

The Canadian national statistics office, Statistics Canada, developed the Canadian Index of Multiple Deprivation (CIMD) to measure regional and national rates of deprivation and to be used as a proxy for individual-level deprivation (Statistics Canada, 2019). However, the CIMD had little direct applicability to children and adolescents. The four key areas of consideration included on the CIMD are residential instability, economic dependency, ethno-cultural composition, and situational vulnerability. These domains can impact young people very differently to adults. For example, adolescents splitting their time between the households of divorced parents may experience residential instability, even if both parents would be considered to be experiencing residential stability.

The challenges with applying the CIMD are not unique, as most studies of deprivation have focused on adult experiences and little is known about deprivation from the perspective of children and adolescents (Main, 2012; Yamaoka et al., 2021). Studies that have focused on children have seldom looked exclusively at the child’s perspective, opting to use data collected about a household or from adults about their children (Main, 2019). This can be particularly problematic as parents and guardians may not fully understand the needs, wants, social contexts, and pressures their children experience, or appreciate the extent of the impact of these experiences. Parents may also under-report the extent of deprivation their children experience because of shame and stigma, or because they do not deem as important items which their children consider to be important (Chzhen et al., 2016).

Capturing deprivation experiences of adolescents.

Adolescence is a time when the focus of relationships extends outside of family, and relationships with peers take on greater importance (Brown & Larson, 2009). Perceptions of belonging can influence academic outcomes, as well as health and well-being, to such an extent that ‘fitting in’ can be more important than academic success within the school setting for many young people. Those who do not feel a sense of belonging with their peers at school are at increased risk of disengaging from school (Schall et al., 2016).

As our understanding of adolescents’ unique experiences increases, so does the need to understand deprivation from their perspective. However, measures of deprivation that have been developed by adults specifically for adolescents have been found to be problematic. For example, the World Health Organisation’s Health Behaviour in School-aged Children study uses an inventory of common material assets in the home (Elgar et al., 2017). Items on the scale, such as the presence of a dishwasher, may be of little relevance to young people in BC, as the presence or absence of such items may have little impact on their relationships with their peers.

The prevalence of measures of childhood experiences developed without the input of young people appears to be in contradiction of Canada’s commitment to the
United Nations Convention on the Rights of the Child (UNCRC) which states that children have a right to be included in matters that affect them. Despite such commitments, meaningful engagement of young people in the development of measures and throughout the research process does not often happen (Dunn, 2015). Excluding young people from the measurement development process is not only in contravention of their rights but also means we cannot know what they feel they need in order to avoid deprivation (Main, 2019).

Recognising children’s right to have their unique experiences captured separately to that of other members of their household, and to have a say in how that occurs, can help to shift the emphasis away from focusing on childhood deprivation as a predictor of poorer outcomes in adulthood (e.g., Zhang & Han 2021) to a recognition that experiencing deprivation as a child or adolescent is also an unacceptable current state which needs to be addressed (UNICEF, 2020). This shift recognises the importance of children’s current ‘being’ as well as their ‘becoming’ – that is, their rights as they relate to both their present circumstances and to their access to future opportunities (White, 2002).

The EU sought to develop a set of child-deprivation indicators, as a more accurate way of assessing children’s well-being than previously used household income measures. However, the resulting index was developed by adults and has not fully captured child deprivation. For example, there has been no consensus on a precise definition of child deprivation, and the indicators continue to be revised (Chzhen et al., 2016). Also, the items have performed differently within different EU countries (Guio et al., 2018). Furthermore, it is unknown if the items included in EU measures to date would reflect the deprivation experience of BC adolescents. For example, it is unknown if BC adolescents would consider it important to their well-being to have two pairs of properly fitting shoes, fresh fruit and vegetables once a day, books at home suitable for their age, indoor games, and a suitable place to study.

When UNICEF developed the Multiple Overlapping Deprivation Analysis (MODA) methodology to consider multidimensional aspects of child poverty and deprivation, they claimed it was a child-centred methodology (de Neubourg et al., 2012). However, despite noting the importance of giving children a voice, no weight appeared to be given to indicators that were developed by and with young people. To be truly child-centric and accurately capture young people’s experiences, it is important to ensure that measures used to assess deprivation reflect material items important to young people rather than items that adults assume to be important to youth (Main, 2019).

Measuring adolescent deprivation in British Columbia.

British Columbia (BC) is Canada’s most westerly province and covers a vast terrain the size of France, Germany, and the Netherlands combined. The province is home to diverse Indigenous and immigrant populations living in a range of large, small, urban, rural, and remote communities (Government of British Columbia, 2022; Smith, 2020). The province encompasses many different cultures, languages, and regions. As such, what is considered deprivation in a remote northern community without Internet access may be very different to what is considered deprivation in a more service-rich and densely populated urban community.
Since 1992, the province’s population-level BC Adolescent Health Survey (BC AHS), which is administered every five years across BC, has consistently failed to adequately measure young people’s experiences of poverty and deprivation (Smith et al., 2014). The history of the BC AHS reflects that of other surveys that have attempted to assess child poverty, in that it initially focused on adult-derived measures of family income, considered the family household as the unit of measurement, and focused on adults’ experiences to determine that of the child.

Relying on young people to have full knowledge of the education, employment, and financial position of adults in their household is problematic in itself, particularly as other studies have found young people generally cannot accurately report household income (Anderson & Holt, 2017). Even if young people know this information, there is an assumption that the experience of adults in their household directly reflects and impacts the experience of the child. Similarly, items that adults consider important for children to have may be irrelevant to many young people’s experiences (Smith et al., 2010).

The BC AHS data was previously used to create the BC Adolescent Health and Wellness Index as part of a larger effort to map wellness and health by region within the province. However, poverty and deprivation were not considered as domains on the index, and the authors identified the lack of engagement of adolescents in the development or review of the index as a limitation (Martin et al., 2012).

During preparations for the sixth BC AHS to be conducted in 2018, BC was the only Canadian province without a poverty reduction plan, while 1 in 5 children in the province lived in poverty, which was the highest rate in Canada (First Call, 2018). There was therefore an urgent need to understand the extent and impact of adolescents’ experiences of poverty and deprivation, as well as a recognition that using traditional measures of family poverty had previously proved largely ineffective.

Main (2012) found that focusing on material deprivation was a relatively simple measure of poverty for children as young as eight years old to easily comprehend, as it relates to their ability to access resources typically available to their peers. The decision was therefore made to focus on adolescents’ experience of material deprivation through the development of a BC Youth Deprivation Index.

Social deprivation was excluded from the index. The BC AHS has traditionally effectively measured this construct with items about relationships with peers, friends’ attitudes, spending too much time on their own, and experiences of bullying and discrimination. All these items have been highly correlated with poorer health outcomes and reduced subjective well-being (Smith et al., 2019). Additionally, when Testi & Ivaldi (2009) compared material and social deprivation, they found material deprivation had a greater impact on health outcomes. Therefore, material deprivation was considered the most appropriate for inclusion on an index for use on the BC AHS.

1.1 Adapting a UK model of index development

A model for developing a child-centric measure of material deprivation in the UK yielded a 10-item index of the items that children (aged eight to 16) felt they needed in order to belong (Main, 2012). The model involved a mixed-methods approach consisting of focus groups and a pilot survey. Thirty-six children between the ages
of eight and 15 from diverse economic backgrounds participated in one of six focus groups. Through the focus groups, the children identified items they thought were important to have and provided their reasons for selecting the particular items. Researchers noted that the items the children felt were needed were not necessarily important in their own right but served the function of allowing them to fit in. For example, a mobile phone was primarily cited as needed to build relationships, have fun and fit in, rather than for its practical or safety features (Main, 2012).

Following analyses of the focus group data, a 20-item index was created where children indicated whether they had the item, did not have it but wanted it, or did not have it but did not want or need it. Pilot testing ensured that some of the 20 items—such as having access to a computer and Internet connection, and receiving presents on special occasions—were ruled out as almost all youth had them and therefore would only be lacked by children in the most extreme poverty. Other items, such as club membership, access to public transportation, and having their own books, were ruled out because more children lacked but did not want these items than lacked and wanted them, suggesting that the absence of these items might not be an indicator of material deprivation (Main, 2012). The index was subsequently reduced to 10 items (Table 1).

The index was incorporated into a survey with a representative sample of UK children and was found to be robust. The majority of children had all the items in the index, and among those who did not have but wanted items, a greater proportion lacked one item than lacked two items and so on, with very few lacking most of the items. The index was tested against objective measures of poverty, subjective well-being, and social exclusion and performed as would be expected. The index also showed excellent internal validity (Main, 2012).

The current study therefore sought to understand if the methodology employed by Main (2012) could be successfully adapted to develop an effective measure of

| Item                                                                 | I have this | I don’t have this but would like it | I don’t have this but don’t want or need it | Don’t know |
|---------------------------------------------------------------------|-------------|------------------------------------|---------------------------------------------|------------|
| Some pocket money each week to spend on yourself                    | ☐           | ☐                                  | ☐                                           | ☐          |
| Some money that you can save each month, either in a bank or at home | ☐           | ☐                                  | ☐                                           | ☐          |
| A pair of designer or brand name trainers (like Nike or Vans)       | ☐           | ☐                                  | ☐                                           | ☐          |
| An iPod or other personal music player                              | ☐           | ☐                                  | ☐                                           | ☐          |
| Cable or satellite TV at home                                       | ☐           | ☐                                  | ☐                                           | ☐          |
| A garden at home or somewhere nearby like a park where you can safely spend time with your friends | ☐           | ☐                                  | ☐                                           | ☐          |
| A family car for transport when you need it                         | ☐           | ☐                                  | ☐                                           | ☐          |
| The right kind of clothes to fit in with other people your age      | ☐           | ☐                                  | ☐                                           | ☐          |
| At least one holiday away from home each year with your family      | ☐           | ☐                                  | ☐                                           | ☐          |
| Trips or days out with your family at least once a month            | ☐           | ☐                                  | ☐                                           | ☐          |
adolescent deprivation in BC, given the province’s size, and complex geographical and social make up.

1.2 Youth Participatory Action Research (YPAR)

A Youth Participatory Action Research (YPAR) approach can be an effective way to capture valuable and different perspectives from young people, as well as providing them with an opportunity to research the issues important in their life (Edirmanas-inghe, 2021). Such an approach allows young people to co-create knowledge about issues of relevance to them which can build skills and empower them, while supporting researchers to develop relevant and understandable data collection tools and ensuring interpretation of the data resonates with young people (Tiexiera et al., 2021). Building on Main’s (2012) methodology, the current study added a YPAR component to include young people with lived experience of deprivation in the data collection and analysis for the project, and to ensure the developed index was reflective of the experiences of young people in BC.

As part of their training, youth researchers learned about various systems and structures which may contribute to young people’s experiences of deprivation. Exploring these systems allowed youth researchers to better understand the goal of developing the index, and how it could be applied to contribute to change for other young people. The training process allowed the youth researchers to develop a sense of value, self efficacy, and control. This can be particularly important when dealing with a sensitive topic such as deprivation as it can help to build resiliency and lead to additional benefits for the youth researchers (Cattaneo & Chapman, 2010; Pritchard, 2004).

1.3 Ethical considerations

The inclusion of a YPAR component to the project (i.e., having young people who have experienced deprivation talk to other young people about the topic) requires ethical considerations beyond those which would be present for a study entirely conducted by adults. Considerations include the need to ensure young people’s role is not tokenistic, their experience is validated, and that the confidentiality of both the youth researchers and research participants is protected (Tiexiera et al., 2021). These were addressed in the project through staff training to ensure adult researchers could respectfully share power and space with the youth researchers, young people having an allocated staff member they could check in with if any issues arose, youth researchers receiving regular training and support, and through the availability of support services independent of the research team. Youth researchers were also trained to recognise their own biases and assumptions, and to be aware that other young people’s experience of deprivation may have been different to their own.
2 Method

2.1 Developing a Youth Deprivation Index for use in BC

To develop the BC Youth Deprivation Index, 22 adult facilitated focus groups were held with 238 adolescents aged 12–19 in urban, semi-urban, rural, and remote communities in each of the province’s five regions (North, Interior, Fraser, Vancouver Coastal, and Island). Focus group participants were reflective of the diversity of adolescents in the province, and additional recruitment strategies were employed to ensure a representative sample of Indigenous youth, immigrant youth, youth with a disability, and youth of different gender identities and sexual orientations. For example, four focus groups were held exclusively with Indigenous youth, one with recent immigrants, one with youth in government care, one with homeless youth, and one with sexual and gender minority youth. The purpose of the focus groups was to collect a diverse range of adolescents’ perspectives on what material deprivation looked like for young people growing up in BC.

Following Main’s (2012) model, focus groups were preferred to individual interviews to allow young people to discuss the issues among themselves, ensure the reasons for the selection of certain items were deliberated, and to establish where there was consensus. The adult-led focus groups lasted approximately 90 min and were facilitated by two experienced community-based researchers.

After young people provided informed consent to participate in a focus group, and ensuring they fully understood that they could cease participation at any point or could choose to skip activities or questions, adolescents were invited to join the group. As the topic of material deprivation could have elicited some emotive responses and led to members of the group learning personal information about the experiences and living situations of their peers, the focus groups began with the development of a group agreement to maximise safety and confidentiality. All participants were also offered a resource card detailing local support services.

Each session included semi-structured small and large group discussions; and exercises that asked participants to identify the material items youth needed to feel like they belonged and which if they did not have could lead to them being or feeling excluded. The final activity was a ‘dotmocracy’ where young people were given 10 stickers to highlight the items they thought were most important. They could assign as many stickers to an item as they felt reflected its level of importance. For example, if they thought a smartphone was the only item young people needed to feel like they belonged, they could place all 10 stickers on that item. At the completion of the focus group, participants were compensated with a $15 gift card for their participation.

Community-based researchers also trained six members of their organisation’s Youth Research Academy to conduct interactive peer-to-peer focus groups. All members of the Academy had lived experience of deprivation. The youth researchers hosted three focus groups and received input into the development of the index from 62 youth in the Fraser and Vancouver Coastal regions of BC. Findings from the focus groups were used to support the development of the index.

Data gathered through the adult-led and youth-led workshops were combined and a thematic analysis was conducted. Thematic analysis, involving summarising...
the data content and identifying and interpreting key themes, has previously been validated as an approach to working with qualitative data provided by adolescents (Clarke & Braun, 2017). Clarke and Braun’s (2006) six step thematic analysis framework was used and involved transcribing and reviewing notes from each of the focus groups; organising the data and generating codes for different items listed by adolescents; identifying, reviewing and defining common themes in the data; and writing up the findings. The youth researchers were trained to conduct a thematic analysis which they completed for the three focus groups they conducted. They were also given the opportunity to reflect on and discuss the results of the thematic analysis conducted by adult researchers before it was finalised.

Thematic analysis of the focus group data indicated that the themes raised at the youth-led and adult-led focus groups were similar. Also, although the specific items identified in each community were not always the same, the themes were consistent. For example, in Prince Rupert (a community that has significant and regular rainfall), participants spoke of the need to have a certain brand of rain wear in order to feel like they belonged, whereas in the urban centre of Burnaby, a specific brand of casual athletic clothing was felt to be important to participants’ sense of belonging. In each community these items were classified as ‘clothes in order to fit in.’

Similarly, ‘some space of your own to hang out in’ was a theme that emerged in communities across the province. However, it was described differently in different regions, including young people having their “own bedroom”, “an outdoor play area”, “garden space”, “somewhere quiet to talk [on phone]”, and their “own place to do homework and play games”.

Items were not included on the index if they were only identified as deprivation in certain communities but were not applicable provincially. For example, adolescents in one urban-based focus group noted that having a television in their bedroom was something most of their peers had and that they wanted, but this was not raised by focus group participants in any other community. Other items were excluded if their absence was likely to be life threatening (e.g., shelter, food, and water), as such items would be considered a basic need for survival.

Ten key items were identified that young people in every focus group raised as important to have in order to feel like they belonged, and that received the most votes in dotmocracy exercises. These items were entered into an index with the following stem question: Here is a list of things that young people your age have. Please tell us whether you have each of these. The instructions asked adolescents to mark an answer for each one of the items, and the four response options were: “I have this”, “I don’t have this but want it”, “I don’t have this and don’t want it”, and “I don’t know”.

### 2.2 Piloting the BC Youth Deprivation Index

Piloting was carried out with 297 diverse youth aged 12–19 across BC, including with youth living in economically deprived areas and who self-identified as experiencing poverty. Pilot participants (53.0% female) ranged in age from 12 to 19 (Table 2). The demographic composition of the sample indicated it was diverse with respect to immigrant status, ethnic background, and living situation (Table 2).
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The index was piloted along with other potential measures to be included on the BC AHS. Data from the pilot was entered into SPSS for statistical analysis.

Pilot results.

Participants in the pilot were asked to identify if they experienced challenges answering the questions in the index and if they thought any items which they saw as measures of deprivation had been omitted from the list. Qualitative data indicated that the index was easily understandable to adolescents as young as 12, and that there were no items that needed to be added. Pilot participants were asked about the clarity

| Demographic characteristics of pilot sample (N=297) | % |
| --- | --- |
| Gender identity |  |
| Male | 47.0% |
| Female | 53.0% |
| Age |  |
| 12 years old | 2.2% |
| 13 | 2.6% |
| 14 | 11.5% |
| 15 | 23.7% |
| 16 | 27.4% |
| 17 | 21.9% |
| 18 | 8.9% |
| 19 years old | 1.9% |
| Born outside Canada | 18.9% |
| Arrived in Canada as refugee | 0.7% |
| Background (youth could choose more than one response) |  |
| European | 61.2% |
| East Asian | 15.5% |
| Indigenous | 11.9% |
| Southeast Asian | 7.6% |
| African | 5.4% |
| South Asian | 4.0% |
| Australian/Pacific Islander | 2.9% |
| Latin/South/Central American | 2.5% |
| West Asian | 1.4% |
| Other | 3.6% |
| Don’t know | 7.9% |
| Speak a language other than English at home |  |
| Never | 61.3% |
| Sometimes | 22.7% |
| Most of the time | 16.0% |
| Did not live with parents | 8.1% |
| Lived in single parent household | 21.3% |
| Experience of government care | 5.2% |
| Food insecurity |  |
| Never | 84.2% |
| Sometimes | 13.3% |
| Often | 1.4% |
| Always | 1.1% |
of the response options. A few youth queried whether the “I don’t know” option was redundant. However, after discussion all agreed it was worthy of inclusion.

Using Main’s (2012) methodology, young people were considered deprived of an item if they indicated on the index that they did not have but wanted it. In the current study, most young people who participated in the pilot had most of the items on the index (83.7–97.8%). However, all items were endorsed by at least 1% of the sample as something they would like but did not have and the most commonly endorsed item was money to spend on themselves (Table 3).

Cronbach’s Alpha was used to measure the internal consistency of the index. A Cronbach’s Alpha score of at least 0.7 is considered necessary to confirm a scale is reliable (Field, 2005). Analysis of the pilot data showed the BC Youth Deprivation Index had an overall Cronbach’s Alpha score of 0.87.

Nearly three quarters of adolescents in the pilot were not deprived of any of the items they were asked about, while 20.4% were deprived of one or two items, and 5.4% were deprived of three to five items. No one reported being deprived of more than five items (Table 4).

| Table 3  Youth Deprivation Index Pilot Items and Results |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| Item | I don’t have this but want it | I don’t have this and don’t want it | I have this | I don’t know |
| Money to spend on yourself | 10.2% | 3.2% | 83.7% | 2.8% |
| Some space of your own to hang out in | 7.1% | 1.1% | 89.7% | 2.1% |
| Lunch for school/money for lunch | 5.4% | 5.7% | 87.1% | 1.8% |
| Clothes in order to fit in | 5.0% | 6.1% | 84.9% | 3.9% |
| Smartphone | 4.6% | 3.5% | 90.8% | 1.1% |
| Money for school supplies, school trips and to do extracurricular activities | 4.3% | 0.7% | 93.2% | 1.8% |
| Access to transportation | 3.6% | 0.7% | 93.2% | 2.5% |
| Equipment you need to do extracurricular activities | 2.9% | 9.7% | 85.6% | 1.8% |
| A quiet place to sleep | 1.8% | 0.4% | 96.8% | 1.1% |
| Access to the Internet | 1.1% | 0.0% | 97.8% | 1.1% |

| Table 4  Number of Items Youth Reported Being Deprived of in BC Youth Deprivation Index Pilot |
|-----------------|-----------------|-----------------|
| Items deprived of | Percent of the sample |
| 0 | 74.4% |
| 1 | 14.4% |
| 2 | 6.0% |
| 3 | 3.2% |
| 4 | 1.1% |
| 5 | 1.1% |
The final set of analyses considered the results of the BC Youth Deprivation Index in relation to other measures on the pilot survey which, based on findings from other studies (e.g., Main 2012), would be anticipated to be correlated. The number of items on the index youth felt deprived of was positively correlated with youth reporting they went to bed hungry because there was not enough money for food at home (Spearman’s $\rho = 0.37$, $p < .001$).

Individual deprivation items—such as feeling deprived of money to spend on themselves, clothes to fit in, transportation, money for lunch, or money or equipment to engage in activities—were also associated with food insecurity. For example, while 25% of those who went to bed hungry also felt deprived of money to spend on themselves, 8% of those who did not go to bed hungry felt deprived in this way (Fisher’s one-tailed $p = .002$).

Logistic regression analyses also indicated the BC Youth Deprivation Index was associated with other income-related measures, including not being able to afford to participate in extracurricular activities in the past year (OR = 1.82, 95% CI [1.26, 2.64]), and experiencing past-year discrimination because of how much money they or their family had (OR = 1.54, 95% CI [1.04, 2.27]).

The BC Youth Deprivation Index was negatively correlated with subjective well-being ($r = -0.34$, $p < .001$). Subjective well-being was measured using a five-item modified version of Huebner’s (1991) Students’ Life Satisfaction Scale, which has been successfully used with children and adolescents in other studies (Main & Bradshaw, 2016). Results of a linear regression analysis indicated that deprivation remained a significant predictor of subjective well-being, even after controlling for age and gender ($\beta = -0.31$, $p < .001$; model $F(3, 238) = 11.55$, $p < .001$). In addition, results of a one-way ANOVA indicated significant differences on subjective well-being scores between groups based on their index score ($F(2, 258) = 17.56$, $p < .001$). Post hoc comparisons using the Tukey HSD test indicated that those who felt deprived of one item ($M = 3.4$, $SD = 0.9$) and those deprived of two or more items ($M = 3.1$, $SD = 0.7$) reported lower mean scores of subjective well-being than those who did not feel deprived of any items ($M = 3.9$, $SD = 0.8$). There was no statistically significant difference in subjective well-being between those deprived of one item compared to those deprived of two or more items ($p = .13$).

Following the analysis of the pilot data, the BC Youth Deprivation Index was added to the 2018 BC AHS without any modifications, and was completed by over 38,000 students (Smith et al., 2019).

3 Discussion

After more than two decades of trying to find a useable and useful measure of how young people in BC experience poverty, the shift to focus on material deprivation and the inclusion of the BC Youth Deprivation Index on the 2018 BC AHS was a positive conclusion to this study. The results of the project answered the research question about whether a UK developed methodology for creating a child-centric measure of material deprivation could be adapted for use in Western Canada. The study also showed the validity of including young people in the design of measures intended for
use with adolescents. Doing so not only supported their rights to be involved in decisions that affect them as laid out in the UN Convention on the Rights of the Child, which was ratified by Canada in 1991 (UNICEF, 2013), but also created a measure that was reflective of their experience, rather than what adults assumed their experience to be.

The success of the YPAR approach to validating the findings of the adult-led focus groups was a strength of this study. Others wishing to develop a similar index should consider building on this approach and including young people throughout the development, analysis, and dissemination process. Rather than confining the YPAR approach to specific measures on an adolescent health survey, future studies could build on the approach and ensure young people are involved in the entire survey design process.

Similarly, the ability to identify experiences of deprivation from the unique perspective of adolescents, as opposed to within a family or household unit, can be used to support Canada’s commitment to children’s rights. By identifying current items adolescents lack and which they need to feel they belong, the index can be used to focus attention on children’s rights as they relate to their present circumstances and to increasing their access to future opportunities.

Young people who indicated they did not have but did not want an item on the index were not categorised as being deprived of that item. This was in line with other research in this area (e.g., Main, 2012; Guio et al., 2018). However, it would be important for future studies to focus on this group of young people, and explore their health and well-being. For example, further investigation may allow us to better understand if not wanting an item they do not have is an adaptive response that protects young people from the disappointment and stress associated with not having the item (e.g., Halleröd, 2006, but later refuted by Nandy & Pomati, 2015). The cultural identity of those who did not have and did not want items should also be determined with the larger BC AHS sample.

It may also be that there were some young people whose experience was not reflected in the index because the items they felt deprived of were not included. Although the index was developed with input from young people representing a wide range of ethnic and cultural backgrounds, further analyses should be done to assess the degree to which the index is reflective of the experience of young people from all cultural backgrounds in BC, as well as to validate its utility with younger youth.

As was anticipated, the majority of adolescents were not deprived of any of the items. The pilot data showed that the number of young people deprived of multiple items tailed off significantly above two items, and no participant was deprived of more than five items. However, data from the larger and provincially representative 2018 BC AHS (sample of over 38,000 students) should also be analysed, as it is likely that the most severely deprived young people may not have been in a position to join a pilot session. Additionally, although adolescents from across BC participated in the pilot, the majority were from the more populated and resource rich Fraser and Vancouver Coastal regions which may have led to under-reporting on specific items such as access to transportation and access to the internet.

In some studies where adolescent deprivation has been used as a measure of childhood poverty, those who were deprived of one item would be considered to be living
in poverty, whereas in other studies young people needed to report deprivation of two or more items on an index to be considered to be living in poverty (UNICEF, n.d.). The pilot of the BC Youth Deprivation Index suggests one item would be sufficient to be considered a marker of poverty in BC, as for example there was no statistically significant difference in subjective well-being between those deprived of one item compared to those deprived of two or more items. However, this should be further explored in a population-level sample.

The BC Youth Deprivation Index’s positive correlation with going to bed hungry because there was not enough money for food at home, and its negative correlation with subjective well-being, represented a medium effect size. Cohen (1988) equated this in a real world setting to an effect which is visible to the naked eye, and therefore suggests that the index is capturing the impact of material deprivation for young people across BC.

The significant associations between the index and measures of food insecurity and well-being on the pilot survey increased confidence in the validity of the measure, although it would be necessary to look at the full 2018 BC AHS survey data to ascertain the magnitude of the associations. However, pilot results suggest the index may allow us to better understand the impact of deprivation on healthy development, and to develop more informed policies and programs for BC adolescents than has previously been possible.

When Main (2012) was developing the UK index it was challenging to ascertain if the scale was measuring the intended construct, as no similar measure existed. In the current study there was an advantage because the findings could be compared to at least one other child-derived index. The similarity between the lists of items generated by young people in two countries with very different education, welfare, and health care systems is worth noting. For example, some items directly matched, such as ‘Clothes in order to fit in’ (BC) and ‘Clothes to fit in with other young people’ (UK). Others tapped the same domain but reflected the local context, such as ‘Space of your own to hang out’ (BC) and ‘Garden or other safe outdoor space’ (UK).

‘A quiet place to sleep’ was included on the BC index but not on the UK one. It may be that this item represents something other than material deprivation (such as reflecting the presence of a crying baby in the house, or someone playing loud music all night). However, adolescents in the focus groups spoke about it in the context of material deprivation, including not having a bed to sleep in, lacking a door to their room, or not having a bedroom. This explanatory input from young people shows the value of taking a mixed-methods approach to developing the index and ensuring that rich qualitative data was collected through focus groups.

Similarly, there was one item in the index (‘Equipment you need to do extracurricular activities’) that piloting revealed around three times more young people did not have and did not want (not deprived) than did not have and wanted (deprived). Main (2012) excluded such items. However, a decision was made to keep the item in the index as sufficient young people who participated in the focus groups had raised this as an issue and had voted for its inclusion in their ‘Top 10.’ Additionally, over 85% of young people who participated in the pilot reported having the equipment they needed to do extracurricular activities, while 2.9% indicated wanting but not having this, suggesting it to be a valid item.
Rapid changes in technology, combined with the effects of the COVID-19 pandemic, mean that the index should be revisited before its inclusion on the 2023 BC AHS. For example, young people in the focus groups noted that it was often not the item itself but the function that it served which related to their deprivation experience. For instance, having a smartphone allowed them to participate in conversations with peers, and to connect with one another about what they had seen on social media. It will be important to revisit these items to ensure they are still an accurate indicator of deprivation. For example, given that a significant number of young people living in poverty in BC were offered a free smartphone during the pandemic, this item may no longer be appropriate for inclusion on the index, while other items that were previously not included may now be a more accurate indicator of deprivation.

4 Conclusion

The study sought to address the lack of a meaningful measure of poverty and deprivation for adolescents in BC, Canada, and to understand if the child-centric methodology employed by Main (2012) in the UK could be applied to developing an effective measure of material deprivation. The inclusion of the province’s adolescents in the development and testing of the BC Youth Deprivation Index makes an important contribution to our understanding of material deprivation from the perspective of young people, and highlights the importance of including them in the development of measures to be used with this age group.

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Declarations

Compliance with Ethical Standards Annie Smith, Stephanie Martin, Maya Peled and Colleen Poon declare that they have no conflict of interest. This article did not involve research with animals. As the study did include human participants, ethics approval was secured from the University of British Columbia’s Behavioural Research Ethics Board. Certificate No. H17-01322.

Informed consent was obtained from all participants in the study.

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