Advancing Health Equity in Cancer Care: The Lived Experiences of Poverty and Access to Lung Cancer Screening.

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Research article

Keywords: lung-cancer screening, low-dose CT, health equity, low income, social disadvantage, morphogenetic approach

Posted Date: October 7th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-63970/v1>

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Abstract

Background: Individuals living with low income are more likely to smoke, have a higher risk of lung cancer, and are less likely to participate in preventative healthcare (i.e., low-dose computed tomography (LDCT) for lung cancer screening), leading to equity concerns. To inform the delivery of an organized pilot lung cancer screening program in Ontario, we sought to contextualize the lived experiences of poverty and the choice to participate in lung cancer screening.

Methods: At three Toronto academic primary-care clinics, high-risk screen-eligible patients who chose or declined LDCT screening were consented; sociodemographic data was collected. Qualitative interviews were conducted. Theoretical thematic analysis was used to organize, describe and interpret the data using the morphogenetic approach as a guiding theoretical lens.

Results: Eight participants chose to undergo screening; ten did not. From interviews, we identified three themes: Pathways of disadvantage (social trajectories of events that influence lung-cancer risk and health-seeking behavior), lung-cancer risk and early detection (upstream factors that shape smoking behaviour and lung-cancer screening choices), and safe spaces of care (care that is free of bias, conflict, criticism, or potentially threatening actions, ideas or conversations). We illuminate how 'choice' is contextual to the availability of material resources such as income and housing, and how 'choice' is influenced by having access to spaces of care that are free of judgement and personal bias.

Conclusion: Underserved populations will require multiprong interventions that work at the individual, system and structural level to reduce inequities in lung-cancer risk and access to healthcare services such as cancer screening.

Background

Lung cancer is one of the most commonly diagnosed cancers in Canada, and is responsible for a quarter of all cancer-related deaths (1). Screening using low-dose computed tomography (LDCT) has the potential to diagnose lung cancer at an earlier stage thereby increasing the likelihood of curative therapy (2). Effective screening interventions must reach populations at high-risk. Thus, engagement with individuals between the ages of 55–74 years, who have smoked cigarettes daily for a minimum of 20 years is critical for success (3).

Historically, individuals with lower levels of income and/or education, or recent immigrants are least likely to undertake preventative health practices such as cancer screening (4). For lung cancer screening this is particularly problematic since the greatest lung cancer incidence is found in populations disadvantaged by a variety of social determinants such as income and education (5). Lung cancer screening therefore presents two very specific challenges: (i) a disease distribution that is proportionate to the degree of social disadvantage; and (ii) an opportunity to screen for the disease in the target population, but with a potentially low uptake.

Quantitative and mixed methods studies document that individuals at high-risk of developing lung cancer who decline lung cancer screening are more likely to be active smokers, report personal blame or stigma, perceive lower benefit from undertaking the test, or have fatalistic beliefs about their own well-being (6–8). Current recommendations to target this group therefore are aimed at enhancing invitation strategies (8), developing interventions to support decision-making and decreasing knowledge conflicts about screening between

physicians and patients (7). In this context, a major knowledge gap is an understanding of the lived experiences of individuals who are socially disadvantaged and the factors that influence their choice to access preventative health services, such as LDCT lung cancer screening. Thus, to address this knowledge gap, we conducted a qualitative study in Ontario where the implementation of lung cancer screening is currently being piloted.

Methods

Methodology and Research question (s):

Theoretical thematic analysis (TTA) is a qualitative research methodology that provides a systematic way to organize data, describe data patterns, and interpret using a guiding theoretical lens (9). TTA can be used to contextualize data socially (9) and to produce evidence that is relevant to policy development by illuminating experiences and perspectives in the real-world setting of patients, providers and policy makers (10). TTA is useful in analyzing participant perspectives, particularly if the perspectives are different, by highlighting similarities and differences across a large dataset whilst generating unanticipated insights (9, 11). We therefore used TTA to answer the following research question: What are the perspectives of individuals living with low income towards lung cancer screening and the choice to access or not access screening?

Our study sub-questions were:

- (1) How do the participants' lived experiences of poverty influence their choice to seek preventative healthcare?
- (2) How do positions of social disadvantage affect the perceived need and ability to access lung cancer screening?
- (3) What challenges do participants face as they seek care?
- (4) What differences in perspective are revealed between participants who choose to undergo lung cancer screening versus those who choose not to?

Theoretical framework

The morphogenetic approach is a critical realist theory which posits that three primary causal powers determine individual behavior; namely, structural relationships in society, sociocultural interactions between individuals, and individual agency (12, 13). The term "morpho" takes its roots from the word shape, and "genesis" from the word shaping (12). To be morphogenetic therefore implies taking action for change and the processes that elaborate or change system and/or structure. On the contrary, to be morphostatic implies to resist change and to maintain the status quo (12).

The morphogenetic approach has been described as the preferential framework with which to understand agency in higher education (14, 15) and individual transformation in criminology (16). In this study we introduce the morphogenetic approach to health services research and describe how it can be used to critically contextualize the enablers of health seeking behavior in health promotion practice.

The core assumptions of the morphogenetic approach (Fig. 1) (12) are: (i) that structural relationships pre-exist in society (T1); (ii) that these social structures influence social interaction (T2); (iii) that causal relationships exist

between individuals and groups that influence social interaction (T3); and (iv) that social interaction can influence individual agency and social structure (T4) (12). Subsequently, we applied these core assumptions to theorize the 'choice' to access lung cancer screening for individuals living with low income in the following way (Figure. 1) (17):

1. T1: Social, political, cultural and economic contexts influence current lung cancer risk;
2. T2: Socially-disadvantaged patients interact with the health system through various contexts;
3. T3: These interactions condition patients to respond in a certain way;
4. T4: The choice to seek preventative health care is based on these interactions and can lead to:
 - a. T4a: Morphostasis or structural reproduction, by negative perspectives towards health and health seeking choices, that subsequently maintains the status quo and perpetuates lung cancer risk; or
 - b. T4b: Morphogenesis or structural elaboration, by positive perspectives towards health and health seeking choices that subsequently transforms behavior and potentially lowers lung cancer risk.

Participant recruitment and sampling strategy

Participants were recruited from three primary care sites in downtown Toronto and met the provincial referral criteria for individuals at high-risk for developing lung cancer: i) were between 55 to 74 years of age, ii) had smoked daily for at least 20 years, and iii) did not have any active cancers. We followed provincial exclusion criteria: prior lung cancer, under surveillance for lung nodules, or history of hemoptysis, unexplained weight loss or a life-threatening condition. No prior association existed between the principal researcher and participants prior to the commencement of the study.

Participants who were recruited into the study were categorised as screeners or non-screeners in the following way:

Screeners:

Screeners were study-eligible participants, referred by their healthcare provider, who chose to screen with LDCT. Upon receiving a referral, the patient navigator at the provincial lung cancer pilot screening site called patients to determine eligibility by conducting a risk assessment using PLCO_{M2012} criteria (18). Patients were study-eligible if their calculated risk score was > 2% in the next six years (19), had recently received a LDCT, and consented to be contacted for a research interview.

Non-screeners:

Non-screeners were patients who chose not to undergo LDCT lung cancer screening. Recruitment of non-screeners through the clinical sites was challenging as eligible participants who were not interested in screening were often not interested in participating in the research study. We therefore used a technique called derived rapport (20) in order to recruit non-screeners by leveraging one health provider's established relationship with a low-income patient community. Thus, patients were assessed for lung cancer screening eligibility by that health provider. When participants were not interested in screening they were informed about the study, and introduced to the first author (AS) who was on-site to conduct interviews immediately thereafter.

Data collection

Interview guides were developed using the guiding theoretical lens. Separate interview guides were developed for screeners (supplementary file 1) and non-screeners (supplementary file 2) in order to explore different choices in health seeking behavior. The interview guides included questions on smoking history, smoking cessation, living conditions, and perspectives on health and preventative health care such as lung cancer screening (supplementary files 1 and 2). Semi-structured interviews were conducted with open-ended questions to encourage a participant-led dialogue.

All interviews were conducted by the first author (AS). Verbal consent was provided initially, and participants were periodically asked if they were comfortable in continuing with the interview. Non-screeners were interviewed face-to-face in the clinic space of the healthcare provider who had facilitated their recruitment immediately after they had provided consent. Screeners were interviewed four to six weeks after they underwent LDCT lung cancer screening. Interviews with screeners were performed via telephone in order to reduce attrition as face-to-face interview appointments in low-income populations can be hindered by competing priorities and constrained resources that detract from research participation (20). Interviews lasted approximately 40 to 60 minutes.

All interviews were audio-recorded then transcribed by a professional transcriptionist. Audio files were sent to the transcriptionist on the day of the interviews and transcripts were reread (by AS) for accuracy within two days. Personal identification was removed from the audio and transcribed files, and pseudonyms were given to all participants. Field notes taken during the interviews were added to the study files. Interviewing continued till the point of conceptual saturation.

Participants provided sociodemographic data using a pre-existing health equity survey (21) to capture data including information on the participants' housing status, ethnicity, language, sexual orientation, disability status, and household income.

Data analysis

We followed thematic analysis as described by Braun and Clarke (2006) to organize, describe and interpret the data. The first (AS) and last author (AL) read through the data multiple times to search for repeated patterns of meaning (9) and to develop a coding framework. NVivo 12 software was used to organize the data manually and to code units with similar meaning, even if they did not sync with the theoretical inquiry. This was important to ensure that patterns in text were not missed or disregarded (22). Line-by-line coding was applied to the textual data (AS), and codes were developed iteratively during weekly consultations between two authors (AS, AL). AS is a female medical doctor and critical qualitative researcher. AL is a family physician and clinical epidemiologist. Both AS and AL research health inequities. The larger interdisciplinary research team (all authors) met regularly during all research phases to discuss challenges and emerging themes, and provided an opportunity to regularly peer debrief until we reached conceptual saturation (23) and our final themes. The extended research team comprised of clinical oncologists (GL, LE), radiation oncologists (MG), clinician scientists in addiction and mental health (PS) and homelessness (SH) as well a federal level policy maker that is involved in the implementation of lung cancer screening in Canada (EN). As a team we were concerned with themes occurring at the latent level (Braun & Clarke, 2006). Latent themes seek to explain or understand why participants said or acted in a certain way, and as such differ from semantic themes which are limited to a description of data rather than its interpretation (24).

Ethics

We received ethics approval from the Research Ethics Board at Unity Health Toronto.

Results

Characteristics of study sample (Table 1)

Table 1
Participant Sociodemographic Information.

	Screeners	Non-Screeners
Total	8	10
Age categories		
50–59	1	2
60–69	3	7
70 + years	4	1
Sex		
Male	7	10
Female	1	0
Immigrant status		
Foreign-born	2	4
Canadian-born	6	6
Ethnicity		
White – (North American, European)	6	7
Asian - East (e.g., Chinese, Japanese, Korean)/ South (e.g., Indian, Pakistani, Sri Lankan)	1	1
Other (including Indigenous, Indian and Latin American	1	2
Self reported income (in Canadian dollars)		
0–29,999	6	9
30,000–59,000	2	0
60,000–89,000	0	0
90,000-119,000	0	0
120,000 plus	0	0
Missing	0	1
Sexual orientation		
Heterosexual	7	10
Gay/Bisexual/Lesbian/Queer/Two-Spirit/Other	1	0
Housing		
Own Home	0	0
Renting Home	3	0

	Screeners	Non-Screeners
Community housing	5	3
Homeless shelter	0	7

We interviewed 18 screen-eligible individuals (eight screeners, ten non-screeners), who were primarily male, white and Canadian-born. At the time of interview, seven participants were living in a homeless shelter in downtown Toronto. Eight participants lived in subsidized apartments through Toronto Community Housing, and the remaining three were renting their accommodations. Most participants reported annual incomes below \$30,000 a year, while two reported income levels between \$30,000 and \$59,000. Participants who declined to undergo lung cancer screening were more likely to be living in the homeless shelter (seven participants) and report incomes below \$30,000 (nine participants).

Themes

Pathways of disadvantage

We use the term pathways of disadvantage to describe a social trajectory of events over the life course that influence lung cancer risk and health seeking behavior. For the purpose of our study, we bracketed our analysis of the life course to begin with working conditions, and to end with current risk for lung cancer.

All participants described precarious working conditions that left them in a perpetual state of economic instability as recounted by this participant:

I'm always worried about tomorrow. It's like okay, I have some (money) this week okay, let's see if I can get some more for next week (Jack).

Half of participants reported severely restricted current mobility due to conditions such as spinal and joint injuries and arthritis. For several participants these comorbidities were directly linked to their previous occupation. The correlation between being a manual laborer, debilitating pain and restricted mobility is drawn out by this participant:

My body. It's like the problems with my back and everything just didn't instantly happen. It's, it was going on with me for like years you know and even when I was 40 years old, 45 years old like my back just pounded like crazy like I was always in a lot of pain and I ran you know dozers and scrapers for years like I started really young and you know like it was that type of thing just you know I was suffering a lot in you know the jobs I was doing. I was just in agony you know a lot of the time. Oh, it isn't like it just all of a sudden happened. It was a really slow process again really early (Philip).

All participants shared experiences of being de-housed at some point in time. Unstable working conditions, a fluid income, lack of adequate social assistance through unemployment benefits, and becoming chronically homeless is described by this participant:

Well I pretty much wound up in shelters because like when you run heavy equipment it's not like I was working all year round. I would only work maybe eight months out of each year you know and it was all union work so sometimes the jobs the union would send me to would be six months, some would be a year, some would be

longer so I was in and out of shelters you know. It wasn't like I stayed there for ten years straight. I would get out of a shelter and the job that I would be sent to you know would end, and then I'd go on unemployment, and my unemployment would run out, and then I would go back to a shelter, and it seemed like the more times that I went back to the shelter you know I knew what to expect. And then I would get out of the shelter, and you know things would get going good again and (then) things would go downhill again (Philip).

For participants who chose to undergo lung cancer screening, housing was described as a key determinant that influenced life outlook and subsequent perspectives towards preventative health care in general:

For me it [choosing to undergo screening] was because I had housing and I wanted to look into my health. But for guys on the street and in hostels man, they have other priorities. They need housing first before they can do anything. And that's going to be their problem ... you're way down at the bottom of their priority list right now ... I got to get myself quiet and healthy first and a sane mind at least to be able to make an appointment, but I mean you're not going to do that when you're fighting with residents and staff at a shelter or on the streets (Barry).

Lung cancer risk and early detection

Smoking is the single largest risk factor for lung cancer and an individual's smoking history is a key enrolment criterion for the lung cancer screening pilot in Ontario. For the purpose of our analysis the theme 'lung cancer risk and early detection' was defined as the upstream factors which shape smoking behaviour and lung cancer screening choices.

All participants described the context in which they initiated smoking at an early age. The social acceptability of smoking, availability of cigarettes at an affordable price point, a lack of awareness of the associated harms, and mass media advertising which promoted its use, is recounted by this participant:

I guess like 14, 15; 15 years of age and I guess I was starting. Other people were starting to smoke so I thought yeah, I'll go along with it, with the crew or something like that... Cigarettes in those days were \$0.45 cents I think for a package of cigarettes so even with my measly earnings delivering newspapers I was able to purchase cigarettes so the price was right and then they were available and there was no advertisements about harm to your health on at that time. There was very little said about cigarette smoking, and it was heavily propagandized in Hollywood films and that, so you know (it was) just a thing of the time (Patrick).

All 18 participants had attempted smoking cessation at least once. However, only three participants had successfully been able to quit smoking, and an additional four were actively enrolled in a smoking cessation program. Of the three participants able to quit smoking, one was living in subsidized housing, and the other two were renting their homes, reporting incomes between \$30–50,000 a year. For these participants, having access to material resources (such as income and housing) directly influenced their ability to choose and benefit from smoking cessation. This participant describes in detail how with subsequent to stable housing he was able to plan a step-by-step approach to smoking cessation:

Everybody has priorities. You have priorities in life. You have choices to make every day. You have a priority whether you want to do something next week or not or whether you want to make a plan ... Sometimes you just put it aside until you need to use it and so people that are homeless okay, they're not looking to get help at that end. They're looking to get help to find a home ... Well (smoking cessation for me) was planned because when I was smoking a pack and a half a day and then I cut it down to a package and a quarter a day, then I cut it down

to a pack a day, then down to $\frac{3}{4}$ of a pack a day, then I cut it down to a half a pack a day and then I cut it down to six cigarettes a day. At that point I went to my health provider and got on a plan to get the patch for I think it was two weeks on my arm and to cut out smoking completely (Hank).

All three participants who had successfully quit smoking chose to be screened for lung cancer.

Access to material resources also directly influenced screening perspectives. All eight participants who had undergone screening had their own place to stay (subsidized housing or rent). Five of eight reported having participated in other preventative health checks such as colon cancer screening. Participants who chose not to screen had competing priorities that were urgent and more important to them than screening for an illness that could possibly occur several years later. This participant used the following analogy to describe the irony of recommending a preventative health check to a person who has more crucial needs such as housing:

I'm trying to think of an analogy here. Yes, if a man walks into a health clinic with his leg hanging off; and the doctor says what's wrong with you the person says I've got a cold; [Laugh]. You know people get misdirected as to what is actually wrong with them (Harold).

Safe spaces of care

We defined a safe space of care as a place that is free of bias, judgment, conflict, criticism, or potentially threatening actions, ideas or conversations. We defined this theme as the lived experiences of participants' clinical encounters with their treating family physicians, and the impact of these experiences on their subsequent health promoting practices.

It is important to note that all three participants who were renting their home chose to be screened for lung cancer, whilst all seven participants in the homeless shelter had declined. Of eight participants who were living in subsidized housing at the time of the interviews, five chose to be screened for lung cancer, and three declined. All five who chose to be screened reported having a collaborative/supportive/non-judgemental relationship with their physician that promoted their personal health and wellbeing. These participants shared experiences of care that were sensitive to their life circumstances. Subsequently, participants recounted their clinical encounters as pleasant and comfortable:

Well she has a street-like attitude about things ... she doesn't have to talk with fancy words, and you know. We get along well like our rapport is quite good. She knows where I'm from and you know a lot more than most people know about me so, yeah, she's somebody I feel I can trust you know. You can tell her things and it's; she understands what you're talking about and stuff like that ... You're not actually on a visit there, you're just talking to her and its straight talk, like she doesn't treat you like you're below her or anything like that (Jaden).

In contrast to these experiences, the three participants living in subsidized housing who chose not to be screened described clinical encounters that were judgmental and insensitive to the sociohistorical realities that constituted their lives. One participant described feelings of worthlessness after meeting with his physician; as a person living with low income who had received funding support to get medications, being told that he was using the system for his benefit reminded him of when he was a hungry child begging for food:

They helped me with 60% of the cost of my prescription. One day she said to me that I am taking advantage of the system and I don't know how? How with all my gratitude and the love that I have for her? It made me feel like

shit. It made me feel like when I was a little kid and my mother put me on the street to beg for a piece of bread, looking for something to eat in the garbage cans, and a few tomatoes (Rocco).

Table 2. Summary of Themes, Subthemes and Key Findings.

Theme/subtheme	Finding
Pathways of disadvantage: A pathway of disadvantage is a social trajectory over the life course that significantly influences health risk and health promotion practices.	
Working conditions	Working conditions influencing availability of material resources such as income
Comorbidities	Physical and mental disabilities relating to working conditions and/or life event.
Living conditions	Increased vulnerability to homelessness and housing insecurity.
Life outlook	Competing priorities influencing perspectives on health and well being
Lung cancer risk and early detection: Lung cancer risk and early detection defined as the upstream factors which shape smoking behaviour and lung cancer screening choices.	
Smoking context	Smoking behaviour shaped by availability and acceptability of cigarettes.
Smoking cessation	Ability to quit smoking depending on daily stress and secure housing
Screening perspective	Secure housing influencing an inclination towards preventative health care. Lack of housing and competing priorities shaping reluctance to participate in preventative health care.
Safe spaces of care: A safe space is a place that is free of bias, judgement, conflict, criticism, or potentially threatening actions, ideas or conversations	
Power	Power differentials exist between care providers and patients
Influence	Provision of care which is sensitive to sociocultural history of patient leading to trust and collaboration to better health. Provision of care which is judgemental and insensitive leading to mistrust and avoidance of health services.
	MorphogenesisMorphostasis

Discussion

Despite a publicly funded health system in Canada, participation in population-wide screening programs has not been universal. Differences in screening uptake are associated with income, education and immigrant status (4). Individuals who live with greater degrees of social disadvantage have a higher risk of some cancers and poorer overall survival; this is directly correlated with the social determinants of health and how they intersect across the cancer care continuum (25). Therefore, new interventions such as lung cancer screening must take into consideration differences in utilization and needs, which are based on social location. This is key to preventing an inadvertent widening of the health equity gap that already exists between population group. Our study sought to fill this knowledge gap in the context of lung cancer screening which is currently being pilot tested in the province of Ontario. Specifically, we wanted to understand the perspectives on choice for lung cancer screening

in patients living with low income in order to inform the design and delivery of lung cancer screening as an organized program.

Through semi-structured interviews with individuals living with low income who chose to undergo or not undergo lung cancer screening, we found that participants' interest in screening depended on the availability of adequate housing, which subsequently empowered participants to seek care to advance their health and wellbeing. Further, clinical encounters created a space that needed to be navigated without personal bias and with sociohistorical sensitivity. Participants who recounted their clinical encounters as places of judgment-free care had meaningful relationships with their physicians, and they subsequently trusted their physicians' judgement and recommendations.

All participants in our study initiated smoking at a very early age, recounting cigarettes as being available, accessible and, "the thing to do". Much of this context is related to the mass-marketing campaigns that ran across media stations and sensationalized smoking in the 1950's and 1960's (26). Since then, policies enacted to limit the marketing and use of tobacco products in public spaces have led to decreases in smoking rates across Canada. However, this distribution is skewed such that individuals living with socioeconomic disadvantage are more likely to smoke and less likely to cease smoking (27); this finding is closely reflected in our study, given that all 18 participants had attempted smoking cessation at least once, yet only three had quit successfully.

Given the homogenous nature of our study participants, gender-based differences in choice were not readily apparent. In Canada, females are less likely to smoke on a daily basis compared to men (28). Further, studies illuminate that smoking trajectories are different for women, with peer relationships (29) and educational disadvantage (30) profoundly affecting the initiation of smoking, patterns of daily consumption as well as the ability to succeed at smoking cessation (31). Data also points to the differences in smoking patterns for Lesbian, Gay, Bisexual, Trans, Two Spirit, Queer and other sexual and gender minority individuals (LGBT2SQ+), such that they are more likely to report nicotine dependence and higher rates of cigarette consumption beginning from early adolescence (32–34).

Recent studies have highlighted that willingness to quit smoking is equal across social classes; however, socially-disadvantaged smokers are more likely to: (i) live in an environment where they socialize and work with other socially-disadvantaged people for whom smoking is considered acceptable (35); (ii) use smoking as a way to relax and cope with high daily stress levels (36); and (iii) report experiences of disadvantaged childhood, educational and employment trajectories that shape the pattern and frequency of cigarette consumption (30).

In our study, the three participants who had successfully quit smoking reportedly quit because they became more proactive towards their own health once they had found housing; all three took part in LDCT lung cancer screening. Participants identified living conditions (housing) to be a key determinant of health and wellbeing, particularly in the context of a preventative health check such as lung cancer screening. Significantly, only those participants who had their own place to call home felt empowered enough to seek opportunities to advance their health and then take action to utilize the service of screening. Participants who chose not to undergo screening lived in diverse housing situations that were generally less secure (subsidized housing; homeless shelter). For these participants, lack of adequate housing was one barrier to care.

Another barrier was the attitude and influence of treating physicians, which determined participants' willingness to continue to engage with the health system. For lung cancer screening, physicians are typically gatekeepers to and proponents of the service, and therefore have a critical role in ensuring equitable healthcare delivery. Our findings suggest that physicians and other healthcare practitioners must learn how to deliver care that is free of personal biases to prevent the perpetuation of oppression and the systemic reproduction of health inequities.

According to the "inverse equity hypothesis" (37) population-based health interventions are more rapidly adopted by the wealthy, a term described as "top inequality" (38). This is in contrast to "bottom inequality" which refers to the lag in adoption experienced by the poorest when the intervention has reached high coverage across the remainder of the population (Victora et al., 2005). Thus, individuals developing health interventions must recognize patterns of health inequality and adapt policies and processes to mitigate these effects (39) and prevent a widening of the health equity gap between socially advantaged and disadvantaged population groups (40). Midstream interventions (41, 42) geared at reducing cigarette consumption in the socially-disadvantaged are only likely to be truly successful if incorporated into a broader program that addresses the social context of smoking behavior. As a standalone intervention, nicotine replacement therapy is unlikely to be highly effective in influencing smoking behavior and reducing lung cancer risk for those who are socially-disadvantaged. Similarly, lung cancer screening as a midstream public health program may inadvertently increase health inequities unless proactive and multipronged strategies are in place to increase uptake. Screening programs may also neglect the underlying social context of smoking behavior, such that even if individuals are screened for lung cancer, they may continue to face increased lung cancer risk due to the daily stressors that influence their choice to continue smoking. This approach to care is ignorant of the lived realities of those at high-risk of developing lung cancer, the target population of the lung cancer screening program. An equity-focused approach to screening programs therefore, would demand attention to the social context of cancer risk and utilization rates based on social location.

Health systems can determine how to respond best to inequitable health intervention uptake by engaging with patients to identify strategies that enhance intervention effectiveness (43). Conducting future patient-oriented research that incorporates the lived experience of those at high-risk for lung cancer to guide the development of a multipronged approach (such as education, resources, and tools) can maximize the availability and accessibility of the intervention to the target population (44). This approach, called targeting within universalism implies that a universally available intervention must be accompanied by specific uptake strategies that positively discriminate towards those at highest risk (45).

Strengths And Limitations

The focus of our study was on perspectives towards preventative healthcare, particularly lung cancer screening for individuals living with low income. As such, we have offered an analysis of the lived experiences of choice in relation to income and social class, using a critical realist lens termed the morphogenetic approach. We realize that using a different analytical lens to frame our research, such as intersectionality, would have offered alternative themes and policy recommendations; this can be a future research area as interventions are evaluated for their population effectiveness based on differences in social identity. In particular, we recommend future research with racial and ethnic minority groups in order to understand how stigma and/or racism may create further barriers to healthcare. Specifically, the intersection between gender identity, smoking, homelessness, and the choice to participate in lung cancer screening was not explored in our study and warrants

future exploration. The homogenous nature of our participant sample reflects how we recruited non-screeners through the established practice of one health provider. However, by using this approach, our study is able to demonstrate how derived rapport (Ellard-Gray et al., 2015) can be used to reach research participants who are both high-risk (in terms of health risk for lung cancer) and hard-to-reach (in terms of difficulty to access for research) for a variety of reasons such as geographic location, economic deprivation, or vulnerability due to stigma and disenfranchisement (46, 47). As a qualitative research study, we have described our study setting, recruitment strategy and participant population in order to promote transferability of our research findings.

Conclusion

Inherently, any health promotion program that focuses only on individual uptake, such as choosing to undergo cancer screening, runs the risk of masking the fundamental causes of health conditions and may inadvertently widen health inequities that already exist. Program oversight by a governance structure that is focused on monitoring, tracking and advancing progress towards health equity will be needed. Ultimately, the health system must actively resist increasing the health equity divide by targeting both upstream social policies (that will ultimately reduce cancer risk), as well as midstream interventions that can enhance health seeking choices. To do this would require an emphasis on the social policies that facilitate stable work, adequate income, and secure housing. One of the ways in which this can be achieved is through the integration of patient-identified priorities. Future research into the lived experiences of patients can continue to provide meaningful insights into what works, and what is needed to enhance health promoting opportunities.

Abbreviations

LDCT

Low-dose CT

TTA

Theoretical thematic analysis

PLCO_{M2012}

Prostate, Lung, Colorectal, and Ovarian (PLCO) Cancer Screening Trial risk prediction model

Declarations

Ethics approval and consent to participate

The Research Ethics Board at Unity Health Toronto, Canada provided ethics approval for the study. This included the board's approval to obtain verbal consent from all participants before beginning the research interview. Therefore, prior to the interview all participants were given information about the purpose of the research study and expectations from the interview including interview duration and usage of data. The first author (AS) discussed the ways in which results from the research study would be disseminated and sought approval to record participants verbal consent. After participants agreed to proceed, audio recording was initiated, verbal consent taken, and included in transcribed files as part of data collection.

Consent for publication

Not applicable

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

AS is supported by a Postdoctoral Fellowship Award from the Canadian Institutes for Health Research. AL is supported by a New Investigator Award from the Canadian Institutes for Health Research, as Clinician Scientist by the Department of Family Medicine at the University of Toronto and as Chair of Implementation Science at the Peter Gilgan Centre for Women's Cancers at Women's College Hospital in partnership with the Canadian Cancer Society. AL is the Provincial Primary Care Lead for Cancer Screening at Ontario Health (Cancer Care Ontario). GL is supported by the Lusi Wong Early Detection of Lung Cancer Program and the Alan B. Brown Chair. GL has received funding from an unrestricted Boehringer Ingelheim grant to develop and implement electronic methods of identifying patients suitable for lung cancer screening in family physician offices. PS is a Clinician Scientist funded by Centre of Addiction and Mental Health, Department of Family and Community Medicine and the Ministry of Health and Long Term Care to direct the STOP program- An Ontario wide smoking cessation program focused on reducing inequities of access for discriminated and underrepresented populations. He also receives support from the Medical Psychiatry Alliance. He has independent grants from the GRAND program, created as an arms-length peer reviewed program for smoking cessation. He is an advisor to both Cancer Care Ontario and Canadian Partnership Against Cancer (CPAC) on tobacco cessation in patients with Cancer. EN is an employee of the CPAC, a pan-Canadian health organization, funded by Health Canada.

Funding

This study was funded through grant # 705592 from the Canadian Institutes of Health Research and Canadian Cancer Society awarded to AL and GL. The funding bodies had no role in the design of the study, data collection, analysis, interpretation of data and writing of the manuscript.

Authors' contributions

All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by AS. AL provided advice and direction for the study design and took primary responsibility for data analysis. All authors met regularly to peer debrief about study findings. The first draft of the manuscript was written by AS and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Acknowledgements

This article includes work from the published dissertation of AS. We would like to thank Dr. Dennis Raphael, Dr. Marina Morrow and Dr. Janet Parsons for their invaluable feedback during the conceptual development of this work.

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Figures

Figure 1

Theorizing Choice in Health Promotion through the Morphogenetic Approach.

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