

# Understanding the Utilization of Qualitative Inquiry in Public Health Nutrition Research

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## Abstract

Qualitative inquiry, often characterized by non-numerical data, remains an underutilized tool in various research spheres including public health nutrition. However, there is an existing shared common ground with quantitative research, in that qualitative research can be a useful complementary tool in explaining the underlying meanings of quantitative data by unpacking the complexities of human behaviour and its relation to disease. Moreover, the qualitative approach is often commended for humanizing research by creating a space for the voices and contributions of the participants. Despite such perceived benefits, the position and relevance of qualitative researchers, techniques, and findings in the body of knowledge continue to be questioned and undervalued. Divergent views on the validity and reliability of qualitative research persist.

Consequently, the use of qualitative research methods and the publication of qualitative evidence remain limited in the natural sciences, including public health nutrition. This paper discusses qualitative research--its definition, research design, importance and relevance. Additionally, using specific examples, this paper will elucidate the possibilities and challenges of using qualitative techniques and marrying qualitative and quantitative methodologies in public health nutrition research.

## Introduction

Public health nutrition continues to be defined in different ways; a consensus on what it really means is yet to be reached. Worsely and Lawrence (2007) presented it as a field with a specific focus on the promotion and maintenance of food and nutritional health. They argue that public health nutrition is the bedrock for the social, cultural and economic wellbeing of communities. According to the Nutrition Society's Public Health Nutrition journal it is a field that primarily emphasizes the promotion of good health through nutrition and prevention of nutrition related illness in the population (The Nutrition Society 2019). In another publication, the Journal of Nutritional Disorders and Therapy it is described as a science which helps in promoting the health status of the country by changing the food nutrition system to meet the dietary needs of the population (Longdom Publishing 2019). The Dieticians of Canada, on another hand, posits that public health nutrition exists for the enhancement of health and prevention of nutrition-related diseases (Dieticians of Canada 2019). Despite the lack of agreement, there appears to be a harmony in some basic concepts: the promotion of health and prevention of disease amongst populations.

The importance of optimal nutrition in the sustenance of quality health and life has long been established (Percival 1997, Strain 1999). Malnutrition (both overweight and undernutrition) and its consequences remain a major contributor and cause of disease and death globally (Blossner, De Onis and Prüss-Üstün 2005). For example, both developed and developing countries are grappling with the rise of nutrition-related non-communicable diseases such as diabetes and hypertension (Bloom et al. 2012, Gouda et al. 2019). Meanwhile, in resource-limited settings the lives of young children remain under threat due in particular to stunting (United Nations Children's Fund (UNICEF) et al. 2019, Black et al. 2013). Consequently, there is a growing interest in public health nutrition research in a responsive measure to better understand these challenges.

Generally, research entails investigation processes aimed at discovering new knowledge. In public health nutrition, these processes can give critical insights into disease or behavioural causal pathways, thereby, informing effective and evidence-based targeted interventions and practice (Harris et al. 2009). Public health nutrition inquiry utilizes two broad approaches;

qualitative and quantitative. However, the quantitative approach has historically dominated the sciences since the 17<sup>th</sup> century, placing a lasting emphasis on systematic, statistical, and quantifiable techniques over qualitative, naturalistic and non-numerical ones (Draper 2004). The field of public health nutrition science research has not been an exception. Divergent views about the relevance, utility and importance of qualitative research in health research in general persist.

## Qualitative versus Quantitative Research

Quantitative and Qualitative research methods differ in nature, principles and philosophical assumptions. Quantitative research, as the name suggests, emphasizes inquiry that is based on measurement and quantification (Draper 2004, Abusabha and Woelfel 2003). It is generally considered objective due to the focus on enumeration which drives the pursuit to comprehend causation (Abusabha and Woelfel 2003). Philosophically, this approach assumes physicalism and positivism with the aim to understand and describe phenomena through observable variables (Draper 2004). In physicalism, also known as materialism, the world is interpreted through the physical lens, while positivism accommodates diverse societal perspectives that can be verified quantitatively (Creswell 2018).

In contrast, qualitative research approach is non-numerical and relies on understanding human behaviours through interactions, observations of and inquiry into experiences (Green and Thorogood 2014). Social and cultural aspects of human life, including values and beliefs, intertwine to inform behaviours and practices (Green and Thorogood 2014, Creswell 2018). One of the hallmarks of this kind of inquiry is its emphasis on naturalism and interpretivism which advocates that behaviour can be best understood through interactions and observations within its natural setting and context (Ulin, Robinson, and Tolley 2016). Another key distinction between these two techniques is flexibility; quantitative research is largely conducted within the confines of a controlled environment with standardized and predetermined processes such as hypothesis testing while qualitative research adopts flexibility which allows for modifications throughout the study (Draper 2004, Creswell 2018). In a nutshell, qualitative research is very useful for understanding the “what” of the large-scale phenomena through numbers, while qualitative research may be more apt at providing an in-depth analysis of “why” in specific situations (Al-Busaidi 2008).

## Qualitative Research Design

The design of the qualitative inquiry follows the same pathway as that of quantitative research. At its core, it is driven by a pursuit to answer a research question regarding a phenomenon. The central question is explicit and may have several sub-questions to guide the scope of the research (Creswell 2018, Ulin, Robinson, and Tolley 2016). Qualitative research is anchored on five common approaches: narrative, phenomenology, grounded theory, ethnography, and case study (Creswell 2018, Harris et al. 2009). The narrative approach has its origins in the humanities and as the name depicts is a narration of experiences; participants recall and share their stories with the researcher for chronological narration (Riessman 2008). Phenomenology, with underpinnings in philosophy and psychology, seeks to better understand the people's lived experiences of a particular phenomenon (Harris et al. 2009, Creswell, 2018). Grounded theory, a sociological research design, primarily involves the development of theories based off of participants' views (Charmaz 2014). Ethnography, a common approach among anthropologists, is described as an immersion of a researcher in a context of interest over a prolonged period. A researcher actively engages with and assumes quasi-membership of society to examine its shared social structures and culture through observation and participation (Harris et al. 2009, Creswell, 2018). A case study is an in-depth analysis of a bounded phenomenon. Different factors can bound a case study such as time, geographical location, culture and socio-economic status, depending on the research question (Stake 1995, Alpi and Evans 2019).

In selecting the ideal approach for their work, it is crucial for researchers to understand and situate their work within the existing philosophical assumptions (namely ontological, epistemological, axiological and methodological) and interpretive frameworks (e.g. positivism, social constructivism, feminist theory, realism etc.) that largely guide qualitative research (Creswell 2018, Krauss 2005). Another key characteristic of qualitative research is the role of a researcher in shaping the research outcomes (reflexivity). It is imperative for researchers to reflect and assess the potential role of their background, culture and experiences, as this can minimize biases in how the findings are shaped (Creswell and Creswell 2017).

## Sampling and Data collection

Focus group discussions, interviews, observations, and analysis of existing documents are some of the widely used data collection methods in qualitative research (Harris et al. 2009). A focus group discussion refers to a group interview (8-12 members), often conducted following an interview guide and under the guidance of a facilitator to give direction and ensure equal participation of all members. Different forms of interviews can also be used to solicit information from individuals (structured, semi-structured or in-depth); the main difference is the format of the questions which determines the degree of depth of the responses (Harris et al. 2009). For example, in structured interviews, questions are scripted and often require brief responses. In-depth interviewing, which entails asking general open-ended questions to allow unrestricted and organic knowledge exchange, are widely used, as they yield detailed and comprehensive data (Harris et al. 2009). Technological advancement has introduced new ways of conducting interviews (telephone, internet), thereby creating a shift from the traditional face-to-face technique (Costa et al. 2018). In a qualitative observation, the researcher records the behaviour and activities of the participants as they evolve in their natural setting (Creswell and Creswell 2017). Qualitative observers can choose to participate or not. The collection of existing qualitative documents (such as newspapers, diaries, and official reports) and audio-visual and digital materials (such as social media content, pictures, emails and songs) can also provide important and useful data. Technology has seen the emergence of other methods such as photo-voicing in which participants utilize photography and stories to describe their situations and experiences (Nykiforuk, Vallianatos, and Nieuwendyk 2011). Often times, field notes are taken alongside the audio or video-taping of the data collection processes to ensure rich and layered data.

The indigenous research landscape is continually shedding light on traditional interesting and useful participatory community-based techniques that have been long overlooked. Some of these techniques include sharing circles and symbol-based reflections. A case in point is a study conducted in South Dakota, USA that utilized sharing circles to elicit traditional knowledge from native elders for purposes of developing a culturally appropriate nutrition and physical activity curriculum for the youth. Elders shared insights on the facilitators and barriers of optimal nutrition and physical activity based on their Siouan cultural understanding. Through these

conversational groups, which often resemble focus group discussions, crucial information about the communities' historical and contemporary culturally unique food acquisition and preparation techniques were revealed. These cultural perspectives were considered valuable for the formulation and delivery of culturally appropriate youth nutrition education programs (Brandenburger, Wells and Stluka 2017).

Similar to the photo-voicing technique which uses pictures, the symbol-based reflections approach allows the participants to share their stories virtually through symbols. In Canada, the development and use of Anishnaabe Symbol-Based Reflection (an arts-based and spiritual) technique has been hailed a transformational success among the Indigenous communities of the Anishnaabe territory; it has given them a voice and has empowered them to share their stories at important meetings (Lavallée 2009).

Non-probability sampling is common in quantitative inquiry, often employing purposive sampling instead (Krauss 2005, Harris et al. 2009, Suri 2011). Cleary et al. recommend that sample selection be purposeful and sequential based on a certain criterion guided by a conceptualized theoretical framework (Cleary, Horsfall and Hayter 2014). Moreover, they suggest that small samples promote intensive and in-depth inquiry. In qualitative research, the aim is to reach saturation (a point where new themes or ideas are no longer generated). Data analysis, which is often conducted throughout the data collection process, facilitates the discovery of patterns and themes necessary for developing conclusions and theory. A widely used technique, content analysis, uses codes in various ways to create meanings and interpretations (Hsieh and Shannon 2005). In exploring the efficacy of the interpretative phenomenological analysis in public health research, Fade (2004) highlighted its suitability in nutrition and dietetic research because of its roots in the paradigm on health psychology, critical realism and social cognition.

## Ethics and Gender considerations

Qualitative inquiry involves gathering information from people, about people, hence researchers should anticipate and be aware of any potential ethical issues (Creswell and Creswell 2017).

Ethical research upholds and protects the integrity of participants, ensures trust and transparency

between all parties, and guards against and responds in a timely manner to any misconduct (Israel and Hay 2006). In short, qualitative research should uphold the universal research principle of “do no harm” by promoting the key tenets of ethical research: voluntary participation, informed consent, fairness and equity, and privacy and confidentiality in all its activities (Ciuk and Latusek 2018, Tracy 2010, Sanjari et al. 2014).

Additionally, gender considerations should be taken into account in order to provide a free and conducive environment for all participants (Rieker, Bird and Lang 2010). In Kenya, Njuki and Sanginga’s (2013) work on gender and agriculture has shed light on the persisting gender-influenced inequalities in the agricultural sector which continue to undermine and undervalue women. As a result, they recommend a gender-responsive approach in agricultural research to challenge the existing conventional practices that predominantly exclude women based on historical patriarchal beliefs that permeate the continent. This model seeks, therefore, to recognize and promote the valuable contribution and participation of women in this sector. This model entails practical solutions such as ensuring the use of both male and female enumerators, strategizing the order of questions (to start with questions about women’s control in the households to more complex and sensitive ones), interviewing women and men separately (to improve openness and objectivity) and sex-disaggregation of data for comparisons. Most importantly, this model emphasizes the integration of gender considerations throughout the whole research process. Provisions should be made to encourage the free participation of any group that might appear gender marginalized or oppressed, to make their voices heard.

## The Utilization of Qualitative Research in Public Health Nutrition

The use of qualitative research methods in public health nutrition transcends academic purposes. They are also commonly used for formative evaluation and monitoring of programs, thereby, improving program design and functioning (Abusabha and Woelfel 2003; Anderson, et al. 2015). For example, in Ethiopia, focus group discussions were used to collect data to better understand the gaps between the purpose and practice of the Growth Monitoring Promotion (GMP) program. Participants included mothers and health workers, with the aim to document experiences at the grassroots level. Findings indicated that, although the majority of mothers understood the need

for regular monthly weight monitoring of their children, they lacked knowledge on appropriate responses to the findings, for example, infant and child feeding practices. These results were useful in the identification of gaps that impede the efforts to alleviate child malnutrition in this country (Bilal et al. 2014).

Aboueid et al. (2018), investigated the integration and implementation of recommended weight management and obesity prevention guidelines in primary health care practice. Data were collected from 20 nurse practitioners and family physicians through in-depth interviews. Some of the participants had limited information on the importance of diet assessment. Moreover, long wait times for dieticians was identified among the constraints for accessing nutrition care services. This study gave insights into existing barriers to proper nutrition knowledge dissemination and utilization of the available services, which has the capacity to improve future policy design. In support, Green and Thorogood (2014) state that public health problems are associated with human behaviours, hence the need for increased involvement of social science experts. Moreover, Crotty (1993) argues that qualitative research forms a crucial component of policy and intervention design due to its inclusion of people's perspectives, therefore, promoting ethical practices.

Despite these known potential benefits, the qualitative inquiry remains an underutilized tool in public health nutrition. When utilized, evidence indicates that other data gathering methodologies are often overlooked in favour of the widely used interviewing method. A systematic review by Ottey et al. (2018) assessed the level of use of ethnography in nutrition and dietetics. Results showed an under-appreciation of this technique. Basch (1987) explained that focus group discussions in health education and community behavioural health can foster participation and a sense of belonging among community members, which are a crucial determinant of the success of interventions.

Qualitative research is often criticized for its high flexibility, which is considered to increase the risk of subjectivity and researchers' biases. As a result, there is a widespread belief that this approach is not scientific. It is also posited that this approach lacks the ability to establish



causality, validity and reliability, and quality (Draper 2004, Abusabha and Woelfel 2003). Let us examine each of these research issues.

a) **Causality:** Quantitative researchers argue that causality is a concept that can only be derived from an experiment; observance of two or more physical items (Abusabha and Woelfel 2003). Harris et al. (2009) assert that while quantitative research is suited for evaluations of interventions, outcomes, associations and the risk factors, it falls short in generating causal explanations, which are often embedded within cultures. In spite of his acknowledgement of the lack of attention and robust scholarly analysis on this issue, Maxwell (2004) states that causality in qualitative research can be explained through the interpretation of causal mechanisms and processes even without regular patterns. Based on his realist view, he posits that causal understanding can be derived through the qualitative inquiry lens. For example, this can be achieved through observation of causal processes and the interpretation of contextual effects on the processes of interest. Maxwell (2012) further argues that events and processes that trigger behaviours are real. In support, Creswell (2018) emphasizes flexibility and inductive reasoning to establish meanings, a fundamental aspect of qualitative research.

b) **Validity and reliability:** Another contested aspect of qualitative research is the accuracy and consistency of its processes. The argument is that high flexibility limits validity and reliability. Over time, strategies have been developed to improve the rigour and credibility of qualitative research findings. Some of these include:

*i. Intensive and long-term participation:* spending substantial time in the field with more involvement with research participants will not only ensure the completeness of information gathered but will also increase variety. It is also believed that repeated interviews and observations promote trust between the researcher and the participant, hence allowing the naturalizing of the environments in the process (Harris et al. 2009, Maxwell 2004).

*ii. Provision of rich data also known as “thick description”:* This refers to a process of ensuring a collection of detailed data through a variety of techniques (Wood and Welch 2010, Basch 1987). Fields notes, observations and recording of non-verbal clues could also be a useful resource for data interpretations (Basch 1987).

*iii. Identification and analysis of discrepant, exceptional and negative cases:* In instances where the researcher has cases that seem to be contradicting an established theory, it is important

for the data to be included in the data analysis as well in order to balance any potential biases (Harris et al. 2009, Maxwell 2004).

*iv. Triangulation:* In recognition of diversity in research, it entails the involvement of multiple participants/sources, researchers, methods, or investigators to allow comparisons (Harris et al. 2009, Maxwell 2004). When two independently gathered sources of data (e.g. interviews and focus groups) are triangulated, the patterns that they collectively make evident are more reliable and valid. Reliability can be attained primarily by including different investigators at different research stages.

*v. Member checks:* Also known as respondent validation, it is a useful process for checking misconceptions or interpretations that deviate from the participants' perspectives. The participants are thus involved in the confirmation of interpretations and conclusions drawn about their data (Harris et al. 2009, Maxwell 2004). Moreover, member checks are considered an ethical and respectful practice which honours the role of communities as equal research partners.

c) **Quality:** The quality of research methodology is also highly debated, more especially the lack of clear and standardized qualitative research guidelines. A systematic review by Fade (2003) analysed the use of quality assessment strategies in qualitative research and revealed low utilization of these mechanisms. He therefore, called for the development of some form of language that will be commonly understood among researchers. Pilnick and Swift (2011) recommend that the criteria for assessing quality should include a clear description of all methods utilized by the researcher from conceptualization to publication. Overall, Harris *et al.* (2009) caution that poor quality qualitative research papers risk rejection by peer reviewers, which might explain its under-representation in publications.

The difference in disseminating qualitative findings can be illustrated by a comparison of papers by Bilal et al. (2014) and Anderson et al. (2015). Both examined the utilization and user experiences of two different nutrition intervention programs (Growth Monitoring Program and Canada Food Guide respectively). Although Bilal et al. offer a clear research question that echoes the literature gap, critical information on other sections such as methodology, limitations and implications of the findings lacked depth. Anderson et al., on another hand, stated study proceedings clearly in chronological order and most importantly, highlighted the theoretical approach that guided the study. However, their suggestion of using ethnographic approaches was

not well described, hence raises questions, considering that data were largely collected through interviews. Creswell (2018) posits that although it is not always required to explicitly state the theoretical approaches and philosophical assumptions, data should be presented in a way that allows for their easy identification. In this case, Bilal et al. indirectly embedded these within their work while Anderson et al., explicitly stated them.

## Mixed Methodology

In light of the lack of consensus surrounding qualitative research, as described above, the use of mixed-methods that incorporate both quantitative and qualitative approaches have been explored. Zoellner and Harris (2017) provided a comprehensive analysis of the utilization of mixed methods in nutrition and dietetics research and practices including its nature and the history of this approach. Mixed-methods is as a process of utilizing both qualitative and quantitative methods in the same study to gain an in-depth and complete understanding of the phenomena focused on. Qualitative and quantitative research each have weaknesses which can be compensated for by taking advantage of their complementary strengths. Depending on the research question, the methods can be applied at different time points. In a convergent parallel design, both techniques are employed concurrently, primarily for purposes of data cross-validation.

Abusabha and Woelfel (2003) employed a mixed methodology approach to evaluate factors that determined retention in the US Special Supplemental Nutrition Program for Women, Infants and Children. Five focus groups with diverse ethnic characteristics were included and the findings were used to inform the construction of the survey which followed thereafter. Without these data, some of the barriers that were identified in the survey would have been missed and the quantitative questions would have been missing some valuable context-specific information. On the other hand, it was revealed that the sole use of focus groups would have yielded biased results leading to incorrect theories and conclusions. For example, in some instances, a few participants raised some concerns, which appeared to be not important to the majority of other participants, and therefore these participants' views could not be accounted as representative of the group (Abusabha and Woelfel 2003).

When data are collected in two phases, quantitative followed by qualitative, this is referred to as explanatory sequential design. This design is often useful in the development of quantitative research tools to ensure appropriate, ethical and relevant questions. For example, this is common in designing surveys to enrich the content and to assist in deciding on recruitment and data collection processes. Embedded designs on another hand, incorporate the use of the two different methods with varying priorities, with one technique assuming prominence. On another hand, the transformative mixed research design is characterized by testing of existing solutions and theories with the goal to affect social change. Lastly, the multi-phase design applies to large and multi-dimensional studies where data are collected through a combination of sequential and concurrent approaches at different times (Zoellner and Harris 2017).

Similarly, data can also be analysed in different ways. The widely-used approach for mixed methods research is parallel data analysis where data yielded in both domains are treated independently; thereafter, findings are cross-validated and compared to draw meaningful conclusions (Zoellner and Harris 2017). Conversion analysis quantifies qualitative data through codes and counts while quantitative data is transformed into qualitative data, for example, through simple descriptive statistics. Sequential analysis employs the analysis of data at different stages where findings of one stage inform the next, hence the design unfolds with the process (Zoellner and Harris 2017).

Johnson and Onwuegbuzie (2004) suggest that mixed-methods research can, in marrying the two approaches, recognize and accommodate the weaknesses and strengths of both. They advocate for pragmatism, which views knowledge as a construct of the contextual reality based on social and psychological values. This adoption of shared beliefs and knowledge among the researchers is supported by Morgan (2007) who recommends reorientation of research accordingly. The primary strength of mixed methods approaches is based on the use of combined qualitative (words, pictures) and quantitative (numbers) data to generate meanings (Johnson and Onwuegbuzie 2004). This corroboration and convergence of data enhance evidence and the validity of the findings. However, conducting mixed methodology research is expensive, time-consuming and requires skills in each method employed.

## Conclusions

Qualitative inquiry belongs in public health nutrition research; it is a vehicle for meaningful interactions with the target populations. Additionally, qualitative inquiry brings in the voice of the communities and is a vital platform for collaborations, both necessary for the betterment of the food and nutritional health of communities. The mixed methodology research approach is an emergent technique in taking advantage of the strengths of both qualitative and quantitative techniques which also requires further exploration. Non-numerical findings largely characterized by people's stories can give unique insights into the reality and motives underlying statistical evidence of any particular phenomenon. Efforts to harness and nurture the synergistic relationship between qualitative and quantitative inquiry in public health nutrition research should be given greater priority. Most importantly, since there are various standards for ensuring quality and rigour of qualitative studies (Lincoln and Guba 1985; Schwandt, Lincoln and Guba 2007; Korstjens and Moser 2018), it is imperative to draw on these guiding standards to further interrogate issues related to public health and nutrition. In other words, public health and nutrition research often appear to be more quantitative-driven, hence complementing quantitative methodologies with qualitative strategies would be beneficial in addressing critical issues in the field that might require researchers to draw from both paradigms.

## References

- Aboueid S, Bourgeault I, Giroux I. 2018. Nutrition care practices of primary care providers for weight management in multidisciplinary primary care settings in Ontario, Canada--a qualitative study. *BMC Family Practice* 19(1), 69.  
<https://doi.org/10.1186/s12875-018-0760-3>
- Abusabha R, Woelfel ML. 2003. Qualitative vs quantitative methods: Two opposites that make a perfect match. *Journal of the Academy of Nutrition and Dietetics* 103(5), 566-569.  
<https://www.sciencedirect.com/science/article/pii/S0002822303002815?via%3Dihub>
- Al-Busaidi ZQ. 2008. Qualitative research and its uses in health care. *Sultan Qaboos University Medical Journal*, 8(1), 11.  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3087733/>
- Alpi KM, Evans JJ. 2019. Distinguishing case study as a research method from case reports as a publication type. *Journal of the Medical Library Association: JMLA* 107(1), 1.  
doi: [10.5195/jmla.2019.615](https://doi.org/10.5195/jmla.2019.615)
- Anderson LC, Mah CL, Sellen DW. 2015. Eating well with Canada's food guide? Authoritative knowledge about food and health among newcomer mothers. *Appetite* 91, 357-365. <https://doi.org/10.1016/j.appet.2015.04.063>
- Basch, CE. 1987. Focus group interview: an underutilized research technique for improving theory and practice in health education. *Health Education Quarterly* 14(4), 411-448.  
<https://doi.org/10.1177%2F109019818701400404>
- Bilal SM, Moser A, Blanco R, et al. 201. Practices and challenges of growth monitoring and promotion in Ethiopia: a qualitative study. *Journal of Health, Population, and Nutrition* 32(3), 441. <https://doi.org/10.9745/GHSP-D-16-00062>
- Black RE, Victora, CG, Walker SP, et al. 2013. Maternal and child undernutrition and overweight in low-income and middle-income countries. *The Lancet* 382(9890), 427-451.  
doi: 10.1016/S0140-6736(13)60937-X.
- Bloom DE, Cafiero E, Jané-Llopis E, et al. 2012. The global economic burden of noncommunicable diseases. PGDA Working Papers 8712 Program on the Global Demography of Aging. <https://econpapers.repec.org/paper/gdmwpaper/8712.htm>
- Blossner M, De Onis, M, Prüss-Üstün, A. 2005. Malnutrition: quantifying the health impact at national and local levels. Geneva, World Health Organization (WHO Environmental Burden of Disease Series, No. 12).  
<https://apps.who.int/iris/bitstream/handle/10665/43120/9241591870.pdf>
- Brandenburger SJ, Wells K, Stluka S. 2017. Utilizing talking circles as a means of gathering American Indian stories for developing a nutrition and physical activity curriculum. *Health Education & Behavior* 44(3), 448-453. doi: 10.1177/1090198116674888

- Charmaz K. 2014. Constructing grounded theory. London: Sage. ISBN 978-0-85702-9133.
- Ciuk S, Latusek D. 2018. Ethics in Qualitative Research in Ciesielska M, Jemielniak D. Qualitative Methodologies in Organization Studies. Palgrave Macmillan Cham.
- Cleary M, Horsfall J, Hayter M. 2014. Data collection and sampling in qualitative research: does size matter? *Journal of Advanced Nursing* 70(3), 473-5.  
<https://doi.org/10.1111/jan.12438>
- Costa AP, Reis LP, de Souza, FN, et al. 2018. Computer Supported Qualitative Research: Second International Symposium on Qualitative Research (ISQR 2017) (Vol. 621). Springer.
- Crotty P. 1993. The value of qualitative research in nutrition. *Annual Review of Health Social Science* 3(1), 109-118. <https://doi.org/10.5172/hesr.1993.3.1.109>
- Creswell JW, Creswell JD. 2017. Research design: Qualitative, quantitative, and mixed methods approaches. Sage publications.
- Creswell JW, Poth CN. 2018. Qualitative Inquiry and Research Design. 4<sup>th</sup> edition. SAGE.
- Dieticians of Canada. 2019. Public Health. <https://www.dietitians.ca/Dietitians-Views/Health-Care-System/Public-Health.aspx> (accessed on 27<sup>th</sup> November 2019).
- Draper AK. 2004. The principles and application of qualitative research. *Proceedings of the Nutrition Society* 63(4), 641-6. <https://doi.org/10.1079/PNS2004397>
- Fade SA. 2003. Communicating and judging the quality of qualitative research: the need for a new language. *Journal of Human Nutrition and Dietetics* 16(3), 139-149.  
<https://doi.org/10.1046/j.1365-277X.2003.00433.x>
- Fade S. 2004. Using interpretative phenomenological analysis for public health nutrition and dietetic research: a practical guide. *Proceedings of the Nutrition Society* 63(4), 647-653.  
<https://doi.org/10.1079/PNS2004398>
- Gouda HN, Charlson F, Sorsdahl K et al. 2019. Burden of non-communicable diseases in sub-Saharan Africa, 1990–2017: results from the Global Burden of Disease Study 2017. *The Lancet Global Health* 7(10), e1375-e1387. doi: 10.1016/S2214-109X(19)30374-2
- Green J, Thorogood N. 2014. Qualitative Methods for Health Research. 3<sup>rd</sup> edition. SAGE.
- Harris JE, Gleason PM, Sheean PM, et al. 2009. An introduction to qualitative research for food and nutrition professionals. *Journal of the American Dietetic Association* 109(1):80-90.  
<https://doi.org/10.1016/j.jada.2008.10.018>
- Hsieh H, Shannon SE. 2005. Three approaches to qualitative content analysis. *Qualitative Health Research* 15(9), 1277-1288. <https://doi.org/10.1177%2F1049732305276687>

Israel M, Hay I. 2006. Research ethics for social scientists. Sage.

Johnson RB, Onwuegbuzie AJ. 2004. Mixed methods research: A research paradigm whose time has come. *Educational researcher* 33(7), 14-26.

<https://doi.org/10.3102%2F0013189X033007014>

Korstjens I, Moser A. 2018. Series: Practical guidance to qualitative research. Part 4: trustworthiness and publishing. *European Journal of General Practice*, 24(1), 120-124.

<https://doi.org/10.1080/13814788.2017.1375092>

Krauss SE. 2005. Research paradigms and meaning making: A primer. *The Qualitative Report* 10(4), 758-770. <https://nsuworks.nova.edu/tqr/vol10/iss4/7>

Lavallée LF. 2009. Practical application of an Indigenous research framework and two qualitative Indigenous research methods: Sharing circles and Anishnaabe symbol-based reflection. *International Journal of Qualitative Methods* 8(1), 21-40.

<https://doi.org/10.1177/160940690900800103>

Lawrence M and Worsley T. 2007. *Public Health Nutrition*. McGraw-Hill Education (UK).

Lincoln YS and Guba EG. 1985. *Naturalistic inquiry*. California: Sage Publications.

Longdom Publishing. 2019. *Public Health Nutrition*.

(<https://www.longdom.org/scholarly/public-health-nutrition-journals-articles-ppts-list-298.html>). (accessed on 27<sup>th</sup> November 2019).

Maxwell JA. 2004. Causal explanation, qualitative research, and scientific inquiry in education. *Educational Researcher* 33(2), 3-11. <https://doi.org/10.3102/0013189X033002003>

Maxwell JA. 2012. *A Realist Approach for Qualitative Research*. SAGE.

Morgan DL. 2007. Paradigms lost and pragmatism regained. Methodological implications of combining qualitative and quantitative methods. *Journal of Mixed Methods Research* 1(1), 48-76. <https://doi.org/10.1177%2F2345678906292462>

Njuki J, Sanginga, PC. 2013. *Women, Livestock Ownership and Markets: Bridging the Gender Gap in Eastern and Southern Africa*. Routledge.

Nykiforuk CI, Vallianatos H, Nieuwendyk LM. 2011. Photovoice as a method for revealing community perceptions of the built and social environment. *International Journal of Qualitative Methods*, 10(2), 103-124. doi: [10.4278/ajhp.140428-QUAL-169](https://doi.org/10.4278/ajhp.140428-QUAL-169)

Ottrey E, Jong J, Porter J. 2018. Ethnography in nutrition and dietetics Research: A systematic Review. *Journal of the Academy of Nutrition and Dietetics*. 118(10), 1903-1942.e10. <https://doi.org/10.1016/j.jand.2018.06.002>



- Percival M. 1997. The importance of optimal nutrition. *Clin Nutr Insights*, 5, 1-6.  
<https://pdfs.semanticscholar.org/3ec1/431c7e98001e02ae35c9a2df549cd1baa58f.pdf>
- Pilnick A, Swift JA. 2011. Qualitative research in nutrition and dietetics: assessing quality. *Journal of Human Nutrition and Dietetics* 24(3), 209-214.  
<https://doi.org/10.1111/j.1365-277X.2010.01120.x>
- Sanjari M, Bahramnezhad F, Fomani FK, et al. 2014. Ethical challenges of researchers in qualitative studies: The necessity to develop a specific guideline. *Journal of medical ethics and history of medicine* 7, 14. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4263394/>
- Schwandt TA, Lincoln YS, Guba EG. 2007. Judging interpretations: But is it rigorous? Trustworthiness and authenticity in naturalistic evaluation. *New directions for evaluation*, 2007(114), 11-25F. <https://doi.org/10.1002/ev.223>
- Suri H. 2011. Purposeful sampling in qualitative research synthesis. *Qualitative Research Journal* 11(2), 63-75. <https://doi.org/10.3316/QRJ1102063>
- Stake RE. 1995. *The art of case study research*. Sage.
- Strain JJ. 1999. Optimal nutrition: an overview. *Proceedings of the Nutrition Society* 58(2), 395-396. <https://doi.org/10.1017/S0029665199000518>
- Tracy SJ. 2010. Qualitative quality: Eight “big-tent” criteria for excellent qualitative research. *Qualitative Inquiry* 16(10), 837-851.  
<https://doi.org/10.1177%2F1077800410383121>
- The Nutrition Society. 2019. *Public Health Nutrition*.  
<https://www.nutritionociety.org/publications/public-health-nutrition>.
- Ulin PR, Robinson, ET, Tolley EE. 2016. *Qualitative methods in public health: a field guide for applied research*. John Wiley & Sons.  
[http://alraziuni.edu.ye/book1/nursing/ebooksclub.org\\_Qualitative\\_Methods\\_in\\_Public\\_Health\\_A\\_Field\\_Guide\\_for\\_Applied\\_Research.pdf](http://alraziuni.edu.ye/book1/nursing/ebooksclub.org_Qualitative_Methods_in_Public_Health_A_Field_Guide_for_Applied_Research.pdf)
- United Nations Children’s Fund (UNICEF), World Health Organization, International Bank for Reconstruction and Development/The World Bank. 2019. *Levels and trends in child malnutrition: key findings of the 2019 Edition of the Joint Child Malnutrition Estimates*. Geneva: World Health Organization.
- Wood M, Welch C. 2010. Are “Qualitative and Quantitative” useful terms for describing research? *Methodological Innovations Online*, 5(1), 56-71.  
<https://doi.org/10.4256%2Fmio.2010.0010>
- Zoellner J, Harris JE. 2017. Mixed-methods research in nutrition and dietetics. *Journal of the Academy of Nutrition and Dietetics* 117(5), 683-697.  
<https://doi.org/10.1016/j.jand.2017.01.018>