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Short Literature Review: Types of Questionnaires in Research

Ahmad Khan, MD, MSHs[1] (iD), Bita Mohammadi[2], Mitra Nazari[3], Narges Yousufzada[4], Setara Fayazi[5]

[1]**A T Still Health Sciences University**
[2]**Consulting Psychologist, Kabul Education University**
[3]**Medical Student, Kabul Medical University**
[4]**Bachelor of Business Administration, Kabul University**
[5]**Medical Student, Kabul Medical University**

Correspondig Author: Ahmad Khan, MD, MSHs

Abstract

Researcher uses various types of questionnaire to collect data. This literature review highlights the various types of questionnaires used in research, highlighting their definitions and characteristics. The review categorizes questionnaires into structured, semi-structured, and unstructured. Structured questionnaires are characterized by predetermined questions that facilitate statistical analysis but may limit nuanced responses. Semi-structured questionnaires combine closed and open-ended questions, offering flexibility and depth while complicating data analysis. Unstructured questionnaires prioritize qualitative insights, allowing respondents to articulate their thoughts freely, yet they pose challenges in interpretation and analysis.

Understanding these types of questionnaire enables researchers to select appropriate instruments tailored to their research objectives, ultimately enhancing data quality and reliability. This review underscores the importance of careful questionnaire design in capturing comprehensive and valid data across diverse research contexts. This literature review focuses on the introduction and classification of these diverse questionnaires, enlightening researchers about the variety of data-collection methods at their disposal.

Introduction:

Structured Questionnaires

Structured questionnaires, a widely used research tool, are known for their efficiency (Ranganathan & Caduff,2023). Their predetermined questions and fixed response options, such as multiple-choice, Likert scales, and yes/no questions, allow the swift collection of quantifiable data from participants in diverse research contexts (Sreedharan et al., 2022). Structured questionnaires are designed to minimize variability in respondents' answers, aiming for uniformity in data collection (Jenn, 2006).

According to Marcano Belisario et al. (2015), their standardized format facilitates simplicity and clarity, making them easier to administer and analyze. This rigidity can be particularly beneficial in large-scale surveys where data comparability is essential (Ranney et al., 2015).

Structured questionnaires, with their ability to generate statistically analyzable data, play a significant role in research (Ranney et al., 2015). According to Leung (2015) this format enhances the reliability and validity of the research findings, allowing for generalizations across a larger population. Furthermore, structured questions typically offer quicker response times, as respondents can easily select options instead of composing free-text answers (Dykema et al., 2022), thereby saving time and effort.

Structured questionnaires, despite their strengths, come with limitations that should be considered. The fixed response options may restrict the depth of insights, potentially leading to oversimplification of complex topics (Ranganathan & Caduff,2023). Respondents may feel compelled to select an option that does not fully represent their views, which can result in response bias (Schatz, 2012).

Structured questionnaires are extensively employed in various fields, including market research, public opinion polls, and health assessments. Their structured nature makes them particularly suitable for large samples where statistical analysis plays a significant role (Ponto, 2015).

Semi-Structured Questionnaires

Semi-structured questionnaires are a hybrid research tool combining the advantages of structured and unstructured formats (McIntosh & Morse,2015). They include a mix of closed-ended and open-ended questions, allowing for quantitative data collection and qualitative insights. This type of questionnaire is beneficial in exploratory research where flexibility is required (Renjith et al., 2021).

Semi-structured questionnaires provide a framework with critical questions predetermined by the researcher while also allowing for additional open-ended questions that let respondents elaborate on their answers (Jamshed, 2014). This duality helps researchers delve deeper into complex topics while providing the option for quantifiable breadth (DeJonckheere & Vaughn, 2019).

One of the primary strengths of semi-structured questionnaires is their flexibility. This format of questions enables researchers to adapt inquiries based on respondents' previous answers, potentially leading to richer data (DeJonckheere & Vaughn, 2019). Furthermore, Bell et al. (2019) notes that they encourage respondent engagement by allowing participants to express their thoughts more freely, providing depth and context that purely structured questionnaires lack. However, semi-structured questionnaires also carry limitations (Ranganathan & Caduff,2023). Data analysis can become complicated due to the combination of response types. Coding open-ended responses requires thematic analysis, which can be time-consuming and subjective (Jowsey et al., 2021). Additionally, the reliance on researcher interpretation can introduce biases that may affect the validity of findings (Vukojević, 2016).

Semi-structured questionnaires are widely embraced in qualitative research across various fields, including social sciences, market research, and healthcare studies. They are particularly advantageous in situations where understanding participants' motivations and experiences is paramount (Jordan et al., 2021), making you part of a larger research community.

In market research, for example, semi-structured questionnaires allow companies to gather customer feedback on products while exploring areas for improvement (Chen et al., 2022). They facilitate understanding patient experiences and perceptions in healthcare, enabling more tailored care practices (El-Haddad et al., 2020).

Unstructured Questionnaires

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Unstructured questionnaires are a qualitative research tool primarily characterized by open-ended questions that allow respondents to express their thoughts and opinions in their own words (O'Cathain & Thomas,2004). This format is particularly beneficial in exploratory research, where detailed insights and a deeper understanding of a subject are required(O'Cathain & Thomas,2004). Unstructured questionnaires, designed to collect qualitative data, offer respondents a unique freedom (Paradis et al., 2016). They are often composed of open-ended questions without predetermined response options, allowing individuals to provide detailed answers and encouraging thoughtful reflection on the topic at hand (Connor Desai & Reimers,2019). This freedom from fixed categories facilitates a richer exploration of respondents' perspectives, empowering them to express their thoughts and opinions in their own words (Rana et al., 2023).

The main advantage of unstructured questionnaires lies in their ability to capture complex, nuanced information (Hacking et al., 203). This format of questionnaires can uncover insights that structured formats might miss, with providing a depth of understanding crucial for qualitative analysis (Hacking et al., 203). This format fosters a conversational tone, akin to a one-on-one discussion, which often leads to more honest and comprehensive responses, revealing underlying motivations and attitudes (Amirova et al., 2024).

Moreover, unstructured questionnaires are helpful in new or poorly understood research areas. They allow researchers to explore topics without the limitations imposed by predefined categories, making them ideal for exploratory studies (Choo et al., 2015).

Despite their strengths, unstructured questionnaires come with notable limitations. One significant challenge is the complexity of data analysis (Bai et al., 2018). The varied nature of responses requires careful coding and interpretation, which can be labor-intensive and subjective (Glaser & Strauss, 1967). The potential for researcher bias in interpreting open-ended responses raises concerns about validity and reliability. Furthermore, the open-ended format can lead to more precise or off-topic responses, complicating the data collection (Wijngaards et al., 2019). Respondents may also experience anxiety about articulating their thoughts, leading to varied engagement levels.

Unstructured questionnaires are widely used in qualitative research across various fields, including social sciences, market research, and healthcare (Denny & Weckesser,2022). In social research, they are effective for exploring sensitive topics, as they allow participants to express their experiences freely ((Denny & Weckesser,2022). They can capture patient experiences and perceptions in healthcare, informing better care practices (Schöpf et al., 2019).

Validity and Reliability of Questionnaire

Questionnaires are widely used in research to collect data, but their effectiveness hinges on their validity and reliability (Ranganathan & Caduff, 2023). Validity refers to the extent to which a questionnaire measures what it purports to measure (Belita et al., 2022). It concerns the accuracy and appropriateness of the inferences drawn from the data collected (Belita et al., 2022). Conversely, reliability pertains to the consistency and stability of questionnaire results over time, across different contexts, and among various populations (Ahmed & Ishtiaq, 2021).

Questionnaire Validity

Establishing validity is crucial for ensuring the data's applicability. Content validity is often achieved through expert reviews and pilot testing, which help ensure that all relevant aspects of the construct are covered (Lynn, 1986). Construct validity is assessed through factor analysis, revealing the underlying relationships among measured items (Tavakol & Wetzel, 2020). Correlation studies can evaluate criterion-related

validity by comparing new questionnaire results with established benchmarks (Carmines, 1979).

Questionnaire Reliability

Reliability is vital for confirming that a questionnaire yields stable and consistent results (Trabelsi et al., 2024). Researchers often use Cronbach's alpha to measure internal consistency, aiming for a value above 0.70 to indicate acceptable reliability (Tavakol & Dennick, 2011). Test-retest reliability is gauged by calculating the correlation between two sets of scores, with coefficients above 0.80 generally considered acceptable (Matheson, 2019). Inter-rater reliability measures, such as Cohen's kappa, are helpful when different observers rate the same phenomenon (McHugh, 2012).

A questionnaire demonstrating high validity and reliability enhances the trustworthiness and credibility of research findings (Lenaerts et al., 2021). Valid data leads to accurate interpretations and meaningful conclusions, while reliable instruments provide consistency across studies, fostering comparability and repeatability (Bernardi et al., 2023). Researchers must continuously evaluate and refine their questionnaires to address potential threats to these attributes as the field evolves.

Conclusion

In conclusion, this literature review highlights various types of questionnaires used in research, each with distinct characteristics, advantages, and limitations. Structured questionnaires excel in generating quantitative data and providing clear statistical insights, making them suitable for large-scale studies. However, their rigidity can limit the depth of understanding that more flexible formats can offer. Semi-structured questionnaires strike a balance, allowing for both quantitative and qualitative data collection, which enhances respondent engagement and provides richer insights. Yet, their complexity in analysis necessitates careful consideration to ensure valid interpretations. Unstructured questionnaires, while

providing a platform for nuanced and descriptive responses, involve significant challenges related to data coding and potential biases.

Finally, the choice of questionnaire type should align with the specific research objectives and the characteristics of the target audience. A thoughtful approach to questionnaire design is essential for producing reliable and valid data, thus enriching the overall quality of research outcomes. Future studies should continue to explore innovative approaches to questionnaire development and administration to enhance data collection efficacy across varied research domains.

References

1. Ahmed, I., & Ishtiaq, S. (2021). Reliability and validity: Importance in Medical Research. *JPMA. The Journal of the Pakistan Medical Association*, *71*(10), 2401–2406. https://doi.org/10.47391/JPMA.06-861

2. Amirova, A., Fteropoulli, T., Ahmed, N., Cowie, M. R., & Leibo, J. Z. (2024). Framework-based qualitative analysis of free responses of Large Language Models: Algorithmic fidelity. *PloS One*, *19*(3),e0300024. https://doi.org/10.1371/journal.pone.0300024

3. Bai, F., Ling, J., Esoimeme, G., Yao, L., Wang, M., Huang, J., Shi, A., Cao, Z., Chen, Y., Tian, J., Wang, X., & Yang, K. (2018). A systematic review of questionnaires about patient's values and preferences in clinical practice guidelines. *Patient Preference and Adherence*, *12*, 2309–2323. https://doi.org/10.2147/PPA.S177540

4. Belita, E., Fisher, K., Yost, J., Squires, J. E., Ganann, R., & Dobbins, M. (2022). Validity, reliability, and acceptability of the Evidence-Informed Decision-Making (EIDM) competence measure. *PloS One*, *17*(8),

e0272699. https://doi.org/10.1371/journal. pone. 0272699

5. Bell, K., Fahmy, E., & Gordon, D. (2016). Quantitative conversations: the importance of developing rapport in standardised interviewing . *Quality & Quantity*, *50*(1), 193–212. https:// doi.org/10.1007/s11135-014-0144-2

6. Bernardi, F. A., Alves, D., Crepaldi, N., Yamada, D. B., Lima, V. C., & Rijo, R. (2023). Data Quality in Health Research: Integrative Literature Review. *Journal of Medical Internet Research*, *25*,e41446. https://doi.org/10.2196 /41446

7. Carmines, E. G. (1979). *Reliability and Validity Assessment*. Sage University Paper Series on Quantitative Applications in the Social Sciences.

8. Chen, S. C., Liu, C., Wang, Z., & Arya, F. (2022). Innovative Strategies to Fuel Organic Food Business Growth: A Qualitative Research. *International Journal of Environme-ntal Research and Public Health* , *19*(5), 2941. https://doi.org/10.3390/i jerph19052941

9. Choo, E. K., Garro, A. C., Ranney, M. L., Meisel, Z. F., & Morrow Guthrie, K. (2015). Qualitative research in emergency care part I: Research principles and common applications. *Academic Emergency Medicine : Official Journal of the Society for Academic Emergency Medicine*, *22*(9), 1096–1102. https:// doi.org/10.1111/acem.12736

10. Connor Desai, S., & Reimers, S. (2019). Comparing the use of open and closed questions for web-based measures of the continued-influence effect. *Behavior Research Methods* , *51*(3),1426–1440. https://doi.org/10.3758/s13 428-018-1066-z

11. DeJonckheere, M., & Vaughn, L. M. (2019). Semistructured interviewing in primary care research: A balance of relationship and rigour. *Family Medicine and Community Health* , *7*(2), e000057. https://doi.org/10.1136/ fmch-2018-000057

12. Denny, E., & Weckesser, A. (2022). How to do qualitative research?: Qualitative research methods. *BJOG : International Journal of Obstetrics and Gynaecology*, *129*(7), 1166–11 67. https://doi.org/10.1111/1471-0528.17150

13. Dykema, J., Schaeffer, N. C., Garbarski, D., Assad, N., & Blixt, S. (2022). Towards a reconsideration of the use of agree-disagree questions in measuring subjective evaluations. *Research in Social & Administrative Pharmacy : RSAP*, *18*(2), 2335–2344. https://doi.org/10.1016/j.sapharm.2021.0 6.014

14. El-Haddad, C., Hegazi, I., & Hu, W. (2020). Understanding Patient Expectations of Health Care: A Qualitative Study. *Journal of Patient Experience*, *7*(6), 1724–1731. https://doi.org/10. 1177/2374373520921692

15. Hacking, C., Verbeek, H., Hamers, J. P. H., & Aarts, S. (2023). Comparing text mining and manual coding methods: Analysing interview data on quality of care in long-term care for older adults. *PloS One*, *18*(11), e0292578. https: //doi.org/10.1371/journal.pone.0292578

16. Jamshed S. (2014). Qualitative research method-interviewing and observation. *Journal of Basic and Clinical Pharmacy*, *5*(4), 87–88. https://doi.org/10.4103/0976-0105.141942

17. Jenn N. C. (2006). Designing a questionnaire. *Malaysian Family Physician:The Official Journal of the Academy of Family Physicians of Malaysia*, *1*(1), 32–35.

18. Jordan, J., Clarke, S. O., & Coates, W. C. (2021). A practical guide for conducting qualitative research in medical education: Part 1-how to interview. *AEM Education and Training*, *5*(3), e10646. https://doi.org/10.1002/aet2.10646

19. Glaser, B., & Strauss, A. (2017). *Discovery of Grounded theory: Strategies for qualitative research*. Routledge.

20. Jowsey, T., Deng, C., & Weller, J. (2021). General-purpose thematic analysis: A useful qualitative method for anaesthesia research. *BJA Education*, *21*(12),472–478. https://doi.org/10.1016/j.bjae.2021.07.006

21. Lenaerts, G., Bekkering, G. E., Goossens, M., De Coninck, L., Delvaux, N., Cordyn, S., Adriaenssens, J., Aertgeerts, B., & Vankrunkelsven, P. (2021). A Tool to Assess the Trustworthiness of Evidence-Based Point-of-Care Information for Health Care Professionals (CAPOCI): Design and Validation Study. *Journal of Medical Internet Research*, *23*(10),e27174. https://doi.org/10.2196/27174

22. Leung L. (2015). Validity, reliability, and generalizability in qualitative research. *Journal of Family Medicine and Primary Care*, *4*(3), 324–327. https://doi.org/10.4103/2249-4863.161306

23. Lynn, M. R. (1986). Determination and quantification of content validity. *Nursing Research*, *35*(6), 382-386.

24. McHugh M. L. (2012). Interrater reliability: the kappa statistic. *Biochemia Medica*, *22*(3), 276–282.

25. McIntosh, M. J., & Morse, J. M. (2015). Situating and Constructing Diversity in Semi-Structured Interviews. *Global Qualitative Nursing Research*, *2*, 2333393615597674. https://doi.org/10.1177/2333393615597674

26. Marcano Belisario, J. S., Jamsek, J., Huckvale, K., O'Donoghue, J., Morrison, C. P., & Car, J. (2015). Comparison of self-administered survey questionnaire responses collected using mobile apps versus other methods. *The Cochrane Database of Systematic Reviews*, *2015*(7), MR000042. https://doi.org/10.1002/14651858.MR000042.pub2

27. Matheson G. J. (2019). We need to talk about reliability: Making better use of test-retest studies for study design and interpretation. *Peer Journal*,7,e6918. https://doi.org/10.7717/peerj.6918

28. O'Cathain, A., & Thomas, K. J. (2004). "Any other comments?" Open questions on questionnaires - a bane or a bonus to research?. *BMC Medical Research Methodology*, *4*, 25. https://doi.org/10.1186/1471-2288-4-25

29. Paradis, E., O'Brien, B., Nimmon, L., Bandiera, G., & Martimianakis, M. A. (2016). Design: Selection of data collection methods. *Journal of Graduate Medical Education*, *8*(2), 263–264. https://doi.org/10.4300/JGME-D-16-00098.1

30. Ponto J. (2015). Understanding and Evaluating Survey Research. *Journal of the Advanced Practitioner in Oncology*, *6*(2), 168–171.

31. Rana, K., Poudel, P., & Chimoriya, R. (2023). Qualitative Methodology in Translational Health Research: Current Practices and Future Directions. *Healthcare (Basel, Switzerland)*, *11*(19),2665. https://doi.org/10.3390/healthcare11192665

32. Ranganathan, P., & Caduff, C. (2023). Designing and validating a research questionnaire - Part 1. *Perspectives in Clinical*

Research, *14*(3), 152–155. https://doi.org/10.41
03/picr.picr_140_23

33. Ranney, M. L., Meisel, Z. F., Choo, E. K., Garro, A. C., Sasson, C., & Morrow Guthrie, K. (2015). Interview-based Qualitative Research in Emergency Care Part II: Data Collection, Analysis and Results Reporting. *Academic Emergency Medicine : Official Journal of the Society for Academic Emergency Medicine*, *22*(9),1103–1112. https://doi.org/10.1111/acem.12735

34. Renjith, V., Yesodharan, R., Noronha, J. A., Ladd, E., & George, A. (2021). Qualitative methods in health care research. *International Journal of Preventive Medicine*, *12*, 20. https://doi.org/10.4103/ijpvm.IJPVM_321_19

35. Schatz E. (2012). Rationale and procedures for nesting semi-structured interviews in surveys or censuses. *Population Studies*, *66*(2), 183–195. https://doi.org/10.1080/00324728.2012.658851

36. Schöpf, A. C., Vach, W., Jakob, M., & Saxer, F. (2019). Routine patient surveys: Patients' preferences and information gained by healthcare providers. *PloS One*, *14*(8), e0220495. https://doi.org/10.1371/journal.pone.0220495

37. Sreedharan, J. K., Rao, U. K., Al Ahmari, M., Kotian, S. M., & Mokshanatha, P. B. (2022). Validation of a structured questionnaire to assess the perception and satisfaction of respiratory therapy students toward career prospects and learning resources. *Canadian journal of respiratory therapy : CJRT = Revue Canadienne de la Therapie Respiratoire :*

RCTR, *58*,162–168. https://doi.org/10.29390/cjrt-2022-032

38. Tavakol, M., & Wetzel, A. (2020). Factor Analysis: A means for theory and instrument development in support of construct validity. *International Journal of Medical Education*, *11*, 245–247. https://doi.org/10.5116/ijme.5f96.0f4a

39. Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, *2*, 53–55. https://doi.org/10.5116/ijme.4dfb.8dfd

40. Trabelsi, K., Saif, Z., Driller, M. W., Vitiello, M. V., & Jahrami, H. (2024). Evaluating the reliability of the athlete sleep behavior questionnaire (ASBQ): A meta-analysis of Cronbach's alpha and intraclass correlation coefficient. *BMC Sports Science, Medicine & Rehabilitation*, *16*(1), 1. https://doi.org/10.1186/s13102-023-00787-0

41. Vukojević, B. (2016). Creswell JW: Research design: Qualitative, quantitative, and mixed methods approach, London: Sage publications, 2009. *Politeia*, *6*(12), 191-194.

42. Wijngaards, I., Burger, M., & van Exel, J. (2019). The promise of open survey questions-the validation of text-based job satisfaction measures. *PloS One*, *14*(12), e0226408. https://doi.org/10.1371/journal.pone.0226408