



TACKLING ENERGY POVERTY AS A PUBLIC HEALTH PRIORITY: FROM POLICY TO PRACTICE



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ASSESSING HEALTH IMPACT OF INTERVENTIONS IN LOW-INCOME POPULATION: LESSONS LEARNT FROM WELLBASED PROJECT

This report highlights key lessons learned from assessing the health impact of interventions on socio-economically vulnerable populations. These insights are drawn from the research study conducted within the WELLBASED Project, which included quantitative and qualitative analysis. The goal of WELLBASED research study was to investigate the effects of energy poverty on participants' health and the impact of the interventions against energy poverty carried out during the project. The research program and final results can be found in WELLBASED deliverables Final Analysis Report (Van Grieken et al, 2024) and Qualitative Evaluation Report (Middlemiss et al, 2024).

These research guidelines are organized into four key sections, each addressing a crucial aspect of conducting impactful studies. They cover: (1) considerations related to study design, ensuring methodological rigor and reliability; (2) requirements for data collection, highlighting the methods needed for robust analysis; (3) aspects of intervention programs, focusing on their implementation and effectiveness; and (4) priority topics for future research.

We recommend incorporating these considerations into topic-related research projects, as well as in European research funding calls, including the identified research priorities.



WELLBASED (2021–2025) is a H2020 EU project aimed at delivering comprehensive urban programmes to reduce energy poverty and explore its impact on health. The following pilot cities have implemented their programs: Edirne (Turkey), Heerlen (Netherlands), Jelgava (Latvia), Leeds (UK), Obuda Bekasmegyér (Budapest, Hungary), and Valencia (Spain).

1 STUDY DESIGN CONSIDERATIONS

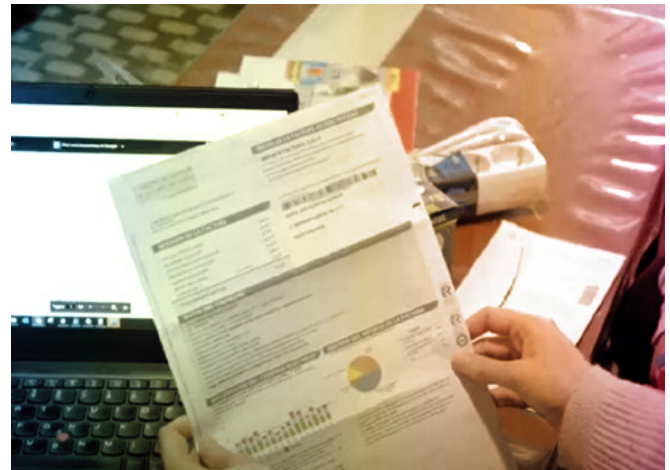
Designing research studies that effectively assess interventions among vulnerable populations presents unique challenges. Traditional controlled trial designs may not always be feasible, making alternative approaches, such as pre-post, stepped wedge or cross-over designs, more relevant. This section explores

key methodological considerations, including recruitment strategies, the use of mixed methods, the importance of stakeholder and end-user engagement, and the benefits of action-based research to enhance study effectiveness and adaptability.

- Consider alternative study designs to address challenges in vulnerable populations.** A pre-post controlled trial design may be challenging to implement in community-based intervention research, especially among vulnerable populations. As such, alternative designs may be considered. For example, stepped wedge design or cross-over design (Hooper, 2021). Alternative designs would specifically allow all (vulnerable) participants to receive the interventions under study.
- Ensure recruitment strategies are similar and consider randomisation.** In case of a controlled design, recruitment strategies for both research conditions should be similar and, when possible, randomisation may be applied to realize comparable participant profiles in both research conditions. Consider providing control group participants with the intervention after the evaluation study has ended.
- Use mixed methods research for comprehensive insights.** Mixed methods research, including quantitative (e.g. surveys) and qualitative (e.g. interviews) methodology, is recommended. Where it is impossible to control changes in society and beyond, qualitative research is particularly important for documenting the broader social impacts on the intervention. Also, qualitative research can help understand the mechanisms through which an intervention did or did not work.
- Plan timelines carefully and engage stakeholders early.** When planning a project timeline, allocate enough time for recruitment and involve stakeholders and end-users early to ensure strategies suit your target groups. Avoid overly long recruitment phases (e.g., over six months) if piloting hasn't started, as participants may lose interest or withdraw. To maintain engagement during extended recruitment, organize activities like lectures or events to keep participants motivated and connected to the project.



- **Adopt an action-based research approach for ongoing optimization.** An action-based research approach that includes frequent monitoring of effect and implementation of the interventions, could allow for a closer evaluation of what is happening and what impact this is having on participants health and wellbeing. Such an approach would also allow for optimizing interventions and research during implementation.
- **Recognise that the health impact of interventions can often take a long time to materialise,** often several years. Impact on mental health and wellbeing can be immediate, but impact on physical health can take longer.



2 DATA COLLECTION

Reliable data collection is critical for accurately measuring the impact of interventions. However, working with socio-economically vulnerable groups requires thoughtful strategies to ensure participation, accessibility, and data quality. This section discusses practical approaches to simplifying engagement, tailoring data collection methods to participants' needs, monitoring external support interventions, and selecting appropriate measurement tools, including those for heat-related health risks.

- **Monitor all additional interventions and support provided to participants.** Monitor and register all interventions and support participants may receive, alongside the intervention under study. This might be done via self-report questionnaire to participants or via pilot coordinators, including a broad range of support options that may be offered to vulnerable groups (e.g. social, financial and energy aids).
- **Simplify research engagement to retain participants.** Make research engagement simple and convenient to retain participants, focusing on collecting only essential data through appropriate methods. For instance, health monitoring can be done via nurse visits or self-reporting, while data collection can involve short or long questionnaires, delivered digitally or on paper.



- **Tailor methods to participants' needs and abilities.** Adapt methods to participants' needs and abilities, providing facilitators where literacy is low. Younger participants often prefer digital self-reporting, while older participants may favor phone calls or home visits, appreciating the opportunity for interaction and socialization.
- **Ensure participants understand monitoring equipment.** Ensuring that participants fully understand the purpose and functionality of any monitoring equipment (e.g. home sensors devices to measure comfort parameters) to avoid rejection.
- **Allow for longer follow-up periods to capture health evolution.** A longer follow-up period may be needed to capture health evolution over time and the impacts on health over time.
- **Align the measurement instruments with the expected impact of the intervention.** Specific health assessments, such as anxiety, stress, depression instruments, might capture impact better than more general assessments. Also, impact might be on the broader spectrum of health and wellbeing such as social support or loneliness (for example, UCLA 3-item Loneliness Scale; Item 1 of Adult Social Care Outcomes Toolkit for Control over Life; Item 5 of Adult Social Care Outcomes Toolkit for Social Support) or community involvement.
- **Include measures to capture the impact of overheating.** Overheating is, especially in warmer countries, more worrisome than problems related to cold. Measures need to be included to capture the impact of heat problems.
- **Allow enough time from the final data collection until the delivery of results** (considering a precautional time lapse in case data collection is slightly delayed).



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INTERVENTION PROGRAMS ASPECTS

The success of intervention programs depends not only on their design but also on how they are implemented and experienced by participants. Involving end-users in co-designing interventions can enhance their relevance and effectiveness, particularly when addressing complex,

multi-layered issues such as energy poverty. This section highlights the need for a holistic approach, the importance of monitoring intervention implementation, and the role of qualitative research in understanding real-world impacts.



- **Involve the target end-users (both citizens and professionals) in the development of the interventions and tailor them to their needs.** End-users need to benefit from the intervention, therefore involving them should be the starting point. In addition, involvement will aid research participant retention as participants will feel more ownership over both the intervention and the research.
- **Interventions across multiple domains and multiple layers are needed for people in vulnerable positions.** For example, interventions on financial, social and energy support and, interventions on awareness of energy poverty as well as structural housing improvement.
- **Monitor the implementation of interventions to evaluate the levels of exposure and the intensity of the interventions exposed to.** The planned interventions often are implemented slightly different due to (unforeseen) circumstances in practice or lower participation to activities. Monitoring implementation therefore provides important information for interpretation of findings and recommendations for policy and practice. Implementation research including qualitative research is needed.
- **Establish trust through ongoing, open communication with participants.** This is fundamental to foster long-term engagement in similar projects with vulnerable populations.

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PRIORITY TOPICS FOR FUTURE RESEARCH

Energy poverty and its health impacts need further investigation. This section identifies pressing research gaps, including the need for deeper insights into summer energy poverty, the development of health and energy poverty indicators, and participatory approaches to intervention design. It also emphasizes the importance of systemic approaches, co-benefit evaluations, and innovative financing mechanisms to improve policy and practice.



- **Summer energy poverty** – our research found extensive evidence of the challenges faced by our participants in the face of extreme summer heat. While some of our interventions attempted to address this, there is a need for better understandings of the extent of people’s experiences, the coping practices they adopt, and means of making more substantial changes to their lives.
- **Continue work developing health and energy poverty indicators.** Energy poverty is complex to measure and indicators need to be continuously monitored on their appropriateness and reliability across countries. Moreover, given the importance of the link between energy poverty and health, there is a need to monitor prevalence and impact of energy poverty on health. Although some health indicators are already part of the energy poverty monitoring structures, further research is recommended to develop these health indicators. .
- **Participatory work on designing interventions:** given the importance of designing interventions that work for the populations that they target, there is a need for more in depth participatory research which engages these populations in intervention design, to contribute to intervention impact and involve end-users.
- **Systems approaches to intervention development and evaluation of interventions for energy poverty.** Energy poverty is a multilayered problem that requires a systemic approach involving actors in different domains. These systemic approaches should be integrated both in intervention development as well as evaluation designs. Moreover, future research calls should emphasize collaboration of research, policy, practice and education across domains in all phases of the research project.
- **Further study to generate evidence on co-benefits of interventions,** for example health impact, healthcare cost savings, Social Return of Investment (SROI).
- **Expand research on alternative indicators for Social Impact Bonds (SIBs).** As the WELLBASED project used a single indicator (energy savings) to assess SIB feasibility, further research should explore additional or combined indicators (e.g., health outcomes) to better capture the complexity of energy poverty.
- **Investigate synergies between Urban Financial Models (UFM) and Social Impact Bonds (SIBs) to enhance financial transparency and fundraising** (see Balás et al., 2024). The UFM can improve transparency by calculating costs and expected returns, making it easier to attract investment for SIBs. When clients understand the financial and social benefits of a contract, they are more likely to invest. However, leveraging this synergy will require further data collection and research.



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FURTHER READING:

[D3.4. WELLBASED Final Report on the Implementation of the Urban Program](#)

[D4.2. WELLBASED Intermediate Analysis Report](#)

[D4.3. WELLBASED Final Pilot Sites Analysis Report](#)

[D4.5. WELLBASED Report from the qualitative study](#)

[D5.1 Analysis of existing and alternative ways of financing urban health interventions aimed to tackle energy poverty](#)

[D5.5. WELLBASED Policy Recommendations](#)

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