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## Perceptions and attitudes of food frequency questionnaires and technology-based dietary assessment tools: a qualitative study with Turkish research-focused dietitians

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Dietary assessment methods play a crucial role in evaluating individuals' and communities' dietary intake (1). Among these methods, Food Frequency Questionnaires (FFQs) are common in epidemiological dietary surveys. However, with the rapid advancement of technology and increased internet usage globally, innovative digital tools to assess dietary intake have emerged (2). Collaborative efforts between tool developers and dietitians are vital for leveraging technology effectively and advancing evidence-based nutrition practice. Thus, the aim of this study was to explore the: 1) perceived advantages and disadvantages of FFQs, 2) challenges and benefits associated with transitioning from traditional paper-based to web-based FFQs, and 3) opportunities and challenges of integrating a range of new technologies, from established digital tools such as web-based or smartphone applications to more futuristic options such as artificial intelligence and biosensors, into dietary assessment practices and research among research-focused dietitians with PhD.

Seven dietitians from Turkey with extensive experience in using dietary assessment methods were selected using purposive sampling. One-to-one semi-structured interviews were conducted using a topic guide via Microsoft Teams and transcribed verbatim into text-based records. They examined advantages and challenges of paper-based and web-based FFQs, ranked a list of predefined features for FFQ development, and provided insights into technology integration, addressing both the benefits and challenges of incorporating new tools. Preliminary thematic analysis was conducted using NVivo12 software to identify common themes.

Participants had an average of 18 years (6–49 years) of experience in nutritional research. Common challenges identified by the group included the absence of validated FFQs in Turkish (n = 5), necessitating the use of FFQs alongside other methods like 24-hour recall (n = 4). General diet representation was commonly appreciated, while all participants deemed paper-based semiquantitative FFQs time-consuming. The top priorities for FFQ enhancement included a semiquantitative feature for nutrient intake calculation, inclusion of portion size photos, and evidence-based development using national diet survey data. None of the participants had employed any digital dietary assessment tools in their research endeavors. However, there was a consensus recognizing the potential benefits and drawbacks of using technology in dietary assessment. Participants highlighted the efficiency (n = 7), increased flexibility in data collection (n = 6), and heightened accuracy (n = 5) associated with technology-based assessment methods as significant advantages. Common concerns included users' lack of proficiency with technology (n = 6), potential challenges related to the cost of research and development (n = 4), and considerations surrounding data privacy and ethical breaches (n = 3), particularly the unauthorized recording of sensitive information by artificial intelligence in camera-based technology.

The insights from Turkish dietitians highlight the necessity for validated Turkish web-based FFQs. While technology-based dietary assessment tools offer research benefits, addressing integration barriers is crucial. These findings will contribute to the development of web-based FFQs and more futuristic dietary assessment tools, advancing evidence-based nutrition practice.

### References

1. Zhao X, Xu X, Li X *et al.* (2021) *Eur J Clin Nutr* **75**(4), 582–587.
2. Dao MC, Subar AF, Warthon-Medina M *et al.* (2019) *Public Health Nutr* **22**(3), 404–418.