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## MyRareDiet®: A diet tracking, monitoring and optimization mHealth tool.

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### Abstract

**Background:** Recent advancements in technology provide promising tools for nutrition research and practice. Using mobile phones to record and photograph food prior to consumption can be an effective method for dietary analysis, reducing reliance on self-report and recall. Research continues to focus on refining and creating new methods to evaluate food intake with greater degrees of accuracy. Wearable and portable technologies have seen vast advances in recent years that allow for continuous collection of biometric data which can be integrated into health assessments. This reduces burden while providing more accurate, consistent data for a variety of health measures. The extensive availability and usage of mobile apps for nutrition-based health interventions makes evaluation of the quality of these apps crucial for integration into nutritional management.

**Objectives/Design:** MyRareDiet® is a nutrition software and mobile application that can be used in nutrition research and patient dietary management. Accurate dietary information is needed to further understand the link between diet and health outcomes, especially in situations that require close diet management. The use of paper diet diaries and food frequency questionnaires are commonly utilized. However, these tools are frequently inadequate. Novel methods of assessing intake are required to reduce the burden in dietary surveys, improve research participation and thereby improve the representativeness of the sample, while at the same time minimizing the impact of measuring dietary intake.

MyRareDiet® has three subsystems: Patient Portal, Researcher Portal, and Clinician Portal. The primary goal of the Patient and Clinician Portals is to enable patients and caregivers to easily track and monitor their own diet so they can meet their strict diet targets and restrictions, while enabling adherence and compliance. The Researcher Portal facilitates collection, study and analysis of diet-based data. MyRareDiet® has an extensive food database, which has been validated at multiple moments in the development process. Usability studies have been conducted to make sure that the program is easily navigated and meets user and clinician needs. The dietary analysis of the program has been validated against 3-day diet records.

**Conclusion:** We developed and validated a mobile app called MyRareDiet®, which is intended to document nutrition intake, facilitate data collection, reduce study burden for families and clinicians, and in the future connect this information with patient health outcomes. MyRareDiet® is designed to address a significant unmet need in nutrition research, and to assist with dietary management designed to increase adherence and compliance that leads to improved outcomes.

### Conflict of Interest

There is no conflict of interest