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Medication adherence support applications for chronic arthritis patients: healthcare providers' perspective in Saudi Arabia

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Agenda

- Introduction
- Methodology
- Results
- Discussion
- Conclusion

Introduction

- Chronic arthritis is due to chronic inflammation in one or different joints in the human body caused by genetic or environmental factors [1].
- Apps that support patient self-management enable users to set reminders, track symptoms, and connect with health professionals [6].
- Stakeholders' involvement in designing mobile health applications is essential, and this should be considered from the early stages [11].
- The involvement of HCPs in designing and developing medication adherence applications is scarce [10].

Method

- The qualitative research design was adopted and ten individual interviews were conducted with HCPs: Rheumatologists (2), Health education specialists (2), Pharmacists (2), Health informaticians (2), and Representatives from the Saudi Arthritis Society (2).
- To explore:
  - Medication adherence barriers
  - Current interventions employed to support medication adherence,
  - Experiences in providing medication adherence support
  - Perceptions regarding mobile apps that support medication adherence for chronic arthritis patients.
- The Health and Medical Human Research Ethics Committee at the University of Wollongong and the MOH in the Kingdom of Saudi Arabia approved the study (Ethics number: 2021/314).

Results

- Four themes emerged from the thematic analysis; these included
  - Informational content
  - Utilitarian
  - Motivational
  - Socialisation features

The informational content

	Subthemes	Initial codes	Quotes
Informational content	Patient awareness	Medications	*"…the medication side effects and the medication benefits on their health, … to motivate them to be adherent." [P10]*
		Healthy lifestyle	*"Once they have ideal weight … some foods lead to rheumatic diseases such as gout …. Physical exercise is important…"[P5]*
		Support programs	*"…different medication support programs offered by charity and governmental health institutions."[P6]*
	Presentation of content	Languages	*"…educational content in different languages to help different patients …"[P5]*
		Different formats	*"…visual person learns by seeing things, and others read the information to make sure, … or hear information through audio broadcasts…"[P9]*
		Clarity	*"clarity of content, "we don't use medical jargon", … written in simple and clear language…"[P5]*
	Credibility	Accuracy	*" …. assessment tools…based on scientific and medical foundations … to make patients trust the results …"[P10]*
		Trustworthy	*"…developed by governmental health institutions that provide reliable health educational content."[P3]*
		Confidential	*"…maintain patient privacy… could motivate the user continue use the app… feel safe."[P4]*

Utilitarian features

Utilitarian	Manage medications	Schedules	*"…alarms & the ability to create medication schedules."[P4]*
		Reminders	*"…set the medication taking times… organise refill times …help patients avoid forgetting medications."[P9]*
		Medications diary	*"…locating the weekly injection site,… When chooses the same site, the app reject…, and the advice patient to change."[P10]*
	Self-monitoring	Health assessment	*"…use assessment tools…Disease Activity Score-28, Health Assessment Questionnaire and define the number of symptoms if they exist, patients need to see the clinician."[P3]*
		Adherence assessment	*"…adherence indicators that show if the patient is taking medications or not."[P1]*
		Goal setting	*"… providing goals related to medication taking, doing exercises, complying with medical appointments and examinations."[P9]*
		Feedback	*"… features that assess the symptoms should provide feedback based on the user data."[P6]*
	Usability	Easy to use	*"…no complex tasks... for setting reminders or searching information …"[P6]*
		Easy to learn	*"… show how to add medications and this process should be smooth."[P10]*
		Safe to use	*"… appropriate and safe services for patients … children group should use the app under the family supervision…"[P5]*
		Interactivity	*"… visual graphics and stimulating sounds when clicking on the buttons…and compliment after taking the medication."[P8]*
		Customizability	*"… personalized services designed to help diverse patients with different arthritis conditions …"[P10]*
	Accessibility	Diversity of users	*"… serve different categories of society with health or digital literacy levels"[P3]*
		Internet access	*"Offline browsing to help different patients utilize the app services when they don't have network access."[P6]*

Motivational features

Motivational	Rewarded	Relevance	*"...valuable and relevant rewards to encourage patients maintaining an appropriate level of adherence."[P8]*
		Sponsored	*" ... sponsorship and partnership with institutes...to support chronic patients in our community."[P7]*
		Prevent cheating	*"...ensure that the user does not fill data just to earn the rewards..."[P2]*

Socialization features

Socialization	Social support	By health professionals	*"... connect the physician to the patient to improve their relationship and follow-up."[P7]*
		By family and friends	*"Sharing medication schedules with family and friends..." [P10]*
	Social learning	Share experiences	*"...app community...help patients to share experiences and learn from others ..." [P5]*
	Social comparison	Competitions	*"...compare the adherence levels with the application community and avoid individual comparisons ..." [P10]*

Discussion & Conclusion

- The app should be designed to improve patient awareness of arthritis treatment and the importance of adherence.
- Usability, accessibility, and patient privacy are essential aspects.
- Users should be provided with rewards that can be earned by:
  - Completing health tasks
  - Building healthy habits
  - Progression
  - Positive participation in the arthritis community
- Focus groups were conducted with arthritis patients to understand their needs and preferences about the design of medication adherence support applications.

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