

Free Full Text from Publisher [Look Up Full Text](#) [Find PDF](#) [Full Text Options](#) [Export...](#) [Add to Marked List](#)

Assessment of Medication Adherence in Saudi Patients With Type II Diabetes Mellitus in Khobar City, Saudi Arabia

By: [AlQarni, K \(AlQarni, Khaled\)^{\[1\]}](#); [AlQarni, EA \(AlQarni, Elham A.\)^{\[2\]}](#); [Naqvi, AA \(Naqvi, Atta Abbas\)^{\[3\]}](#); [AlShayban, DM \(AlShayban, Dhfer Mandi\)^{\[3\]}](#); [Ghori, SA \(Ghori, Syed Azizullah\)^{\[3\]}](#); [Haseeb, A \(Haseeb, Abdul\)^{\[4\]}](#); [Raafat, M \(Raafat, Mohamed\)^{\[5\]}](#); [Jamshed, S \(Jamshed, Shazia\)^{\[6,7\]}](#)

[ORCID](#)

FRONTIERS IN PHARMACOLOGY

Volume: 10
 Article Number: 1306
 DOI: 10.3389/fphar.2019.01306
 Published: NOV 8 2019
 Document Type: Article
[View Journal Impact](#)

Abstract

Objective: Medication adherence is defined as taking medications as advised and prescribed by health care professionals for stated duration. Diabetes mellitus (DM) is one of the most common chronic illnesses in Saudi Arabia. This study aimed to document medication adherence in Saudi patients with type 2 diabetes. Methods: A quantitative cross-sectional study was conducted in Saudi out-patients with type 2 DM in the city of Khobar, Saudi Arabia. The study used the General Medication Adherence Scale (GMAS) to document medication adherence in this population. Data was analyzed through SPSS version 23. Study was ethically approved. Results: Data was collected from 212 patients. Few patients (35.8%) had high adherence to anti diabetic medications. The correlation between Hb(A1c) level and adherence score was negative and significantly strong ($\rho = -0.413, p < 0.0001$). Most patients (N = 126, 59.4%) modified their medication therapy during month of Ramadan and on Eid occasion. Education level was not a determinant of adherence in this population. Conclusion: This study highlighted that medication adherence is influenced by religious and social factors. Patient counseling is required to improve patient beliefs and increase awareness of adhering to prescribed anti diabetic pharmacotherapy. A pharmacist can play constructive role of a disease educator and patient counselor.

Keywords

Author Keywords: medication adherence; diabetes mellitus; type II diabetes mellitus; Khobar; Saudi Arabia
KeyWords Plus: SCALE GMAS; PHARMACIST; MANAGEMENT; PROGRAM; CARE; RECOMMENDATIONS; COUNTRIES; EDUCATION; BARRIERS; RAMADAN

Author Information

Reprint Address: Naqvi, AA (reprint author)
 + Imam Abdulrahman Bin Faisal Univ, Coll Clin Pharm, Dept Pharm, Dammam, Saudi Arabia.

Addresses:

- + [1] Imam Abdulrahman Bin Faisal Univ, Coll Clin Pharm, Dammam, Saudi Arabia
- [2] King Fahd Mil Med Complex, Obstet & Gynecol, Dammam, Saudi Arabia
- + [3] Imam Abdulrahman Bin Faisal Univ, Coll Clin Pharm, Dept Pharm, Dammam, Saudi Arabia
- + [4] Umm Al Qura Univ, Coll Pharm, Dept Clin Pharm, Mecca, Saudi Arabia
- + [5] Umm Al Qura Univ, Coll Pharm, Dept Pharmacol & Toxicol, Mecca, Saudi Arabia
- + [6] Int Islamic Univ Malaysia, Dept Pharm Practice, Kulliyah Pharm, Kuantan, Malaysia
- + [7] Int Islamic Univ Malaysia, Qualitat Res Methodol Applicat Hlth Sci Res Grp, Kulkyyah Pharm, Kuantan, Malaysia

E-mail Addresses: naqiattaabbas@gmail.com

Publisher

FRONTIERS MEDIA SA, AVENUE DU TRIBUNAL FEDERAL 34, LAUSANNE, CH-1015, SWITZERLAND

Journal Information

Impact Factor: [Journal Citation Reports](#)

Categories / Classification

Research Areas: Pharmacology & Pharmacy
Web of Science Categories: Pharmacology & Pharmacy

See more data fields

Citation Network

In Web of Science Core Collection

1

Times Cited

[Create Citation Alert](#)

All Times Cited Counts

1 in All Databases

[See more counts](#)

54

Cited References

[View Related Records](#)

Most recently cited by:

AlShayban, Dhfer Mahdi; Naqvi, Atta Abbas; Alhumaid, Othman; et al. [Association of Disease Knowledge and Medication Adherence Among Out-Patients With Type 2 Diabetes Mellitus in Khobar, Saudi Arabia.](#) FRONTIERS IN PHARMACOLOGY (2020)

[View All](#)

Use in Web of Science

Web of Science Usage Count

0

Last 180 Days

0

Since 2013

[Learn more](#)

This record is from:

Web of Science Core Collection
 - Science Citation Index Expanded

Suggest a correction

If you would like to improve the quality of the data in this record, please [suggest a correction](#).

Cited References: 54

Showing 30 of 54 [View All in Cited References page](#)

(from Web of Science Core Collection)

1. **The association between type II diabetes mellitus and Parkinson's disease** Times Cited: 1
By: Abbas, A.
El. Med. J. Volume: 2 Pages: 1 Published: 2014
2. **Assessment of Depression as Comorbidity in Diabetes Mellitus Patients using Beck Depression Inventory II (BDI II) Scale** Times Cited: 5
By: Abbas, Atta; Nasir, Hira; Zehra, Anum; et al.
JOURNAL OF YOUNG PHARMACISTS Volume: 7 Issue: 3 Pages: 206-216 Published: JUL-SEP 2015
3. **Evidence Based Improvements in Clinical Pharmacy Clerkship Program in Undergraduate Pharmacy Education: The Evidence Based Improvement (EBI) Initiative** Times Cited: 16
By: Abbas, Atta
PHARMACY Volume: 2 Issue: 4 Pages: 270-275 Published: DEC 2014
4. Title: [not available] Times Cited: 15
By: ADNAN S
INT J PHARM THERAPEU Volume: 5 Pages: 117 Published: 2014
5. **Recommendations for Management of Diabetes During Ramadan** Times Cited: 176
By: Al-Arouj, Monira; Assaad-Khalil, Samir; Buse, John; et al.
DIABETES CARE Volume: 33 Issue: 8 Pages: 1895-1902 Published: AUG 2010
6. **Pharmacy Practice and the Health Care System in Saudi Arabia** Times Cited: 16
By: Al-jedai, Ahmed; Qaisi, Shrouq; Al-meman, Ahmed
CANADIAN JOURNAL OF HOSPITAL PHARMACY Volume: 69 Issue: 3 Pages: 231-237 Published: MAY-JUN 2016
7. **Diabetes mellitus in Saudi Arabia** Times Cited: 340
By: Al-Nozha, MM; Al-Maatouq, MA; Al-Mazrou, YY; et al.
SAUDI MEDICAL JOURNAL Volume: 25 Issue: 11 Pages: 1603-1610 Published: NOV 2004
8. **Treatment-related misconceptions among diabetic patients in Western Saudi Arabia** Times Cited: 12
By: Al-Saeedi, M; Elzubier, AG; Bahnassy, AA; et al.
SAUDI MEDICAL JOURNAL Volume: 23 Issue: 10 Pages: 1243-1246 Published: OCT 2002
9. **Saudi adults satisfaction with community pharmacy services** Times Cited: 3
By: Al-Tannir, Mohamad; Alharbi, Afnan I.; Alfawaz, Arwa S.; et al.
SPRINGERPLUS Volume: 5 Article Number: 774 Published: JUN 17 2016
10. **Pharmaceutical Care in the Community Pharmacies of Saudi Arabia: Present Status and Possibilities for Improvement** Times Cited: 6
By: Alanazi, Abdulrahman S.; Alfadl, Abubakr A.; Hussain, Abubaker S.
SAUDI JOURNAL OF MEDICINE & MEDICAL SCIENCES Volume: 4 Issue: 1 Pages: 9-14 Published: JAN-APR 2016
11. **Counselling practices in community pharmacies in Riyadh, Saudi Arabia: a cross-sectional study** Times Cited: 22
By: Alaqeel, Sinaa; Abanmy, Norah O.
BMC HEALTH SERVICES RESEARCH Volume: 15 Article Number: 557 Published: DEC 15 2015
12. **The impact of pharmacists providing direct patient care as members of interprofessional teams on diabetes management** Times Cited: 2
By: Alfayez, Osamah M.; Al Yami, Majed S.; Fazel, Maryam T.
SAUDI PHARMACEUTICAL JOURNAL Volume: 25 Issue: 7 Pages: 1019-1021 Published: NOV 2017
13. **Prevalence of diabetes mellitus in a Saudi community** Times Cited: 171
By: Alqurashi, Khalid A.; Aljabri, Khalid S.; Bokhari, Samia A.
ANNALS OF SAUDI MEDICINE Volume: 31 Issue: 1 Pages: 19-23 Published: JAN-FEB 2011
14. **Patients' management of type 2 diabetes in Middle Eastern countries: review of studies** Times Cited: 7
By: Alsairafi, Zahra Khalil; Taylor, Kevin Michael Geoffrey; Smith, Felicity J.; et al.
PATIENT PREFERENCE AND ADHERENCE Volume: 10 Pages: 1051-1062 Published: 2016
15. **Hospital pharmacy practice in Saudi Arabia: Drug monitoring and patient education in the Riyadh region** Times Cited: 12
By: Alsultan, Mohammed S.; Mayet, Ahmed Y.; Khurshid, Fowad; et al.
SAUDI PHARMACEUTICAL JOURNAL Volume: 21 Issue: 4 Pages: 361-370 Published: OCT 2013
16. **Impact of pharmacist intervention in patient counseling at point of hospital discharge in a specialized cardiac center in Saudi Arabia** Times Cited: 4
By: Assiri, Turki; Khurshid, Fowad; Almutairi, Meshal; et al.
TROPICAL JOURNAL OF PHARMACEUTICAL RESEARCH Volume: 16 Issue: 5 Pages: 1187-1193 Published: MAY 2017
17. **Type 2 diabetes patients' and providers' differing perspectives on medication nonadherence: a qualitative meta-synthesis** Times Cited: 42
By: Brundisini, Francesca; Vanstone, Meredith; Hulan, Danielle; et al.

18. **COEFFICIENT ALPHA AND THE INTERNAL STRUCTURE OF TESTS** Times Cited: 17,805
By: Cronbach, Lee J.
PSYCHOMETRIKA Volume: 16 Issue: 3 Pages: 297-334 Published: SEP 1951
19. Title: [not available] Times Cited: 4
Group Author(s): General Authority for Statistics. Kingdom of Saudi Arabia
Demographic survey Published: 2016
accessed 29 September 2019
20. **Recommendations for the role of the pharmacist in Saudi Arabia** Times Cited: 5
By: Haseeb, Abdul; Elrggal, Mahmoud E.
ARCHIVES OF PHARMACY PRACTICE Volume: 4 Issue: 3 Pages: 138-138 Published: JUL-SEP 2013
21. Title: [not available] Times Cited: 1,500
By: Hatcher, L.
A step-by-step approach to using the SAS system for factor analysis and structural equation modeling Published: 1994
Publisher: SAS Institute Inc, Cary
22. **Interventions for enhancing medication adherence** Times Cited: 1,315
By: Haynes, R. B.; Ackloo, E.; Sahota, N.; et al.
COCHRANE DATABASE OF SYSTEMATIC REVIEWS Issue: 2 Article Number: CD000011 Published: 2008
23. **Factors affecting medication adherence in elderly people** Times Cited: 18
By: Jin, Hyekyung; Kim, Yeonhee; Rhie, Sandy Jeong
PATIENT PREFERENCE AND ADHERENCE Volume: 10 Pages: 2117-2125 Published: 2016
24. Title: [not available] Times Cited: 1
By: Karim, S.; Al Aziz, A. S.; Fawzy, M.; et al.
Medication adherence in saudi hypertensive patients-an insight Published: 2014
Available at Accessed on 27 July 2017
Publisher: Qassim University
URL: https://www.researchgate.net/publication/266259777_Medication_Adherence_in_Saudi_Hypertensive_Patients_-_An_Insight
[Show additional data]
25. **Factors contributing to non-compliance among diabetics attending primary health centers in the Al Hasa district of Saudi Arabia** Times Cited: 50
By: Khan, Ataur R.; Lateef, Zaki N. Al-Abdul; Al Aithan, Mohammad A.; et al.
JOURNAL OF FAMILY AND COMMUNITY MEDICINE Volume: 19 Issue: 1 Pages: 26-32 Published: JAN-APR 2012
26. **Compliance and control of diabetes in a family practice setting, Saudi Arabia.** Times Cited: 22
By: Khattab, M S; Aboifotouh, M A; Khan, M Y; et al.
Eastern Mediterranean health journal = La revue de sante de la Mediterranee orientale = al-Majallah al-sihhiyah li-sharq al-mutawassit Volume: 5 Issue: 4 Pages: 755-65
Published: 1999-Jul
27. **Predictors of Medication Adherence and Blood Pressure Control among Saudi Hypertensive Patients Attending Primary Care Clinics: A Cross-Sectional Study** Times Cited: 14
By: Khayyat, Sarah M.; Saeed Khayyat, Salwa M.; Hyat Alhazmi, Raghda S.; et al.
PLOS ONE Volume: 12 Issue: 1 Article Number: e0171255 Published: JAN 30 2017
28. **The practice of counseling in Pharmacy: patients' perspectives** Times Cited: 1
By: Layqah, L. A.; Alakeel, Y. S.; Shamou, J. Z.
Int. J. Hosp. Pharmacy Volume: 3 Pages: 17 Published: 2018
29. **The efficacy of a diabetic educational program and predictors of compliance of patients with noninsulin-dependent (type 2) diabetes mellitus in Al-Khobar, Saudi Arabia** Times Cited: 4
By: Mokabel, Fatma M.; Aboulazm, Shadia F.; Hassan, Hanan E.; et al.
JOURNAL OF FAMILY AND COMMUNITY MEDICINE Volume: 24 Issue: 3 Pages: 164-172 Published: SEP-DEC 2017
30. **Practical Issues in Calculating the Sample Size for Prevalence Studies** Times Cited: 374
By: Naing, L.; Winn, T.; Rusli, B. N.
ARCHIVES OF OROFACIAL SCIENCE Volume: 1 Pages: 9-14 Published: 2006

Showing 30 of 54 [View All in Cited References page](#)

