

# Gender Differences in Quality of Life among Patients with Type 2 Diabetes in Saudi Arabia

Saud S Alharbi<sup>1)</sup>, Hyder Osman Mirghani<sup>2)</sup>, Saif Mohammed Alamri<sup>3)</sup>,  
Majed Saeed Alqhatani<sup>3)</sup>, Ahmad Hassan Alghamdi<sup>3)</sup>, Yousef Saad Alanazi<sup>6)</sup>,  
Hanan Mohammad H AlJammaz<sup>6)</sup>, Ghadeer Ali Albalawi<sup>6)</sup>,  
Abdullah Mohammed Alsayed<sup>6)</sup>, Eman Mohsen Abutaleb Qisi<sup>7)</sup>

## ABSTRACT

**Introduction:** Diabetes mellitus is a common disease and negatively impacted quality of life. Studies on quality of life among patients with type 2 diabetes scarce in Saudi Arabia. This is the first study to assess gender differences in quality of life among patients with type 2 diabetes.

**Material and Method:** We aimed to assess the same in the Kingdom of Saudi Arabia. PubMed, Medline, and Google Scholar with interest in articles comparing the quality of life among women and men with type 2 diabetes in Saudi Arabia. Besides, the references list was searched for additional relevant studies. The search engine was limited to the period from inception up to October 2022. The words diabetes mellitus, quality of life, Saudi Arabia, women versus men, and gender differences were used. A structured table detailing the author's name, year of publication, patient number, and quality of life score among males and females. The RevMan system, version 5.4. was used for data analysis. Seven studies including 1862 patients were pooled. The studies were all cross-sectional and showed lower quality of life among women with type 2 diabetes with significant differences (odds ratio, -0.14, 95% CI, -0.24-0.04, P-value for overall effect, 0.008, and the Chi-square, 14.41).

**Results:** There was significant heterogeneity between the studies,  $I^2 = 86\%$ , P-value for heterogeneity, 0.0007. Women with type 2 diabetes in Saudi Arabia showed lower quality of life compared to their male counterparts.

**Conclusion:** Further larger multi-center studies matched for demographic factors and glycemic control are recommended

## KEY WORDS

gender differences, quality of life, type 2 diabetes, Saudi Arabia

## INTRODUCTION

Diabetes mellitus is growing worldwide and the Kingdom of Saudi Arabia is among the countries with the highest prevalence, nearly one-third of Saudi adults were suffering from diabetes and the expectation for the year 2030 is 45.4%<sup>1)</sup>. Diabetes mellitus influences the quality of life through its physical and psychological complications<sup>2)</sup>. Diabetes

self-care is a challenging, complex therapy; awareness regarding complications and fear of hypoglycemia are major determinants of quality of life among patients with diabetes<sup>3)</sup>. Quality of life worsens as diabetes progresses and with differences in sociodemographic factors and clinical variables<sup>4)</sup>. Although, diabetes mellitus is costly and is reflected on the patients, their families, and the whole community. However, intangible costs including depression, anxiety, and quality of life greatly affect the patient's life<sup>5)</sup>. Health-related quality of life (HRQL) is a central domain of diabetes care and is essential for decision-making. There is

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1) Family Medicine, Department of Family Medicine, Faculty of Medicine, University of Tabuk, Saudi Arabia

2) Internal Medicine and Endocrine, Department of Internal Medicine, Faculty of Medicine, University of Tabuk, Saudi Arabia

3) Internal Medicine, King Fahd Specialist Hospital, Tabuk, Saudi Arabia

4) Family Medicine and Diabetology, King Fahd Specialist Hospital, Tabuk, Saudi Arabia

5) Endocrinology, King Fahd Specialist Hospital, Tabuk, Saudi Arabia

6) King Fahd Specialist Hospital, Tabuk, Saudi Arabia

7) Diabetes Center, King Fahd Specialist Hospital, Tabuk, Saudi Arabia

Correspondence to: Saud Alrehaily  
(e-mail: salrehaily@ut.edu.sa)

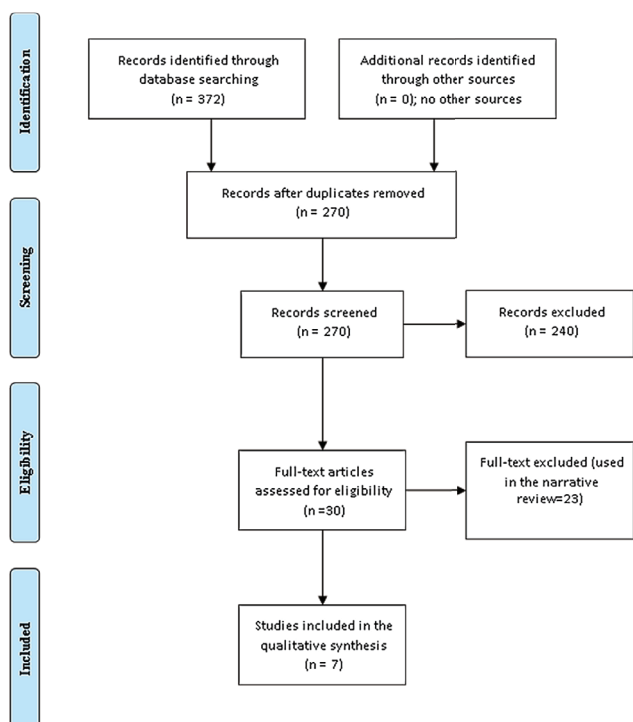


Figure 1: Gender-related difference in the quality of life among Saudi patients with type 2 diabetes mellitus (The PRISMA Chart).

increasing attention to HRQL together with traditional morbidity and mortality measures<sup>6</sup>). The attitude and behavior of men and women towards diabetes care differ, women had a higher perception of diabetes symptoms and are more concerned regarding hyperglycemic and hypoglycemic excursion (major determinants of quality of life)<sup>7</sup>. The current meta-analysis aimed to assess gender-related differences in quality of life among Saudi patients with type 2 diabetes mellitus.

## SUBJECTS AND METHODS

### Eligibility Criteria according to PICOS:

All prospective and retrospective cohorts, case-control studies, and cross-sectional studies assessing the quality of life among patients with type 2 diabetes in the Kingdom of Saudi Arabia were eligible. The search engine was limited to the period from the first published article up to October 2022 and studies published in English. Case reports, animal studies, or otherwise published in a language other than English were not included.

### Outcome measures:

The primary outcome was the gender difference in the quality of life among patients with type 2 diabetes. The quality of life was assessed using a self-administered questionnaire based on the QoL-5 dimension (references 8, 9, 12-14) scale and the quality of life 36-item short-form questionnaire (references 10 and 11).

### Information sources and search:

Two researchers (H. M and A. M) undertook a systematic literature search; the search was conducted in PubMed, Medline, and Google Scholar with an interest in articles comparing the quality of life among women and men with type 2 diabetes in Saudi Arabia. Besides, the references list was searched for additional relevant studies. The search engine was limited to the period from inception up to October 2022. The words diabetes mellitus, quality of life, Saudi Arabia, women versus men, and gender differences were used.

A structured table detailing the author's name, year of publication, patient number, and the quality of life score among males and females. The two authors cross-checked the collected data for any errors and dis-

Table 1: Quality of life (across gender) among patients with diabetes mellitus

Author	Country	Type of Study	Patients	Males	Females	Results
AbuAlhommos <i>et al.</i> 2022 [8]	Al-Ahsa	Cross-sectional	Adults with type 2 DM (321)	1/119	0.65/202	Lower among women
Al-Aboudi <i>et al.</i> 2015 [9]	Riyadh	Cross-sectional	Adults with type 2 DM (75)	0.74/58	0.58/17	Lower among women
Albader <i>et al.</i> 2019 [10]	Riyadh	Cross-sectional	Adults with type 2 DM (482)	0.63/302	0.43/180	Lower among women
Al Hayek <i>et al.</i> 2014 [11]	Riyadh	Cross-sectional	Adults with type 2 DM (283)	69/105	50/178	Lower among women
Almasry <i>et al.</i> 2020 [12]	Jeddah	Cross-sectional	Adults with type 2 DM (131)	0.70/72	0.72/59	No difference
Alshayban <i>et al.</i> 2020 [13]	A-Khobar	Cross-sectional	Adults with type 2 DM (378)	60/182	59/186	No difference
Alsawayt <i>et al.</i> 2021 [14]	Riyadh	Cross-sectional	Adults with type 2 DM (274)	82/125	100/149	Lower among women

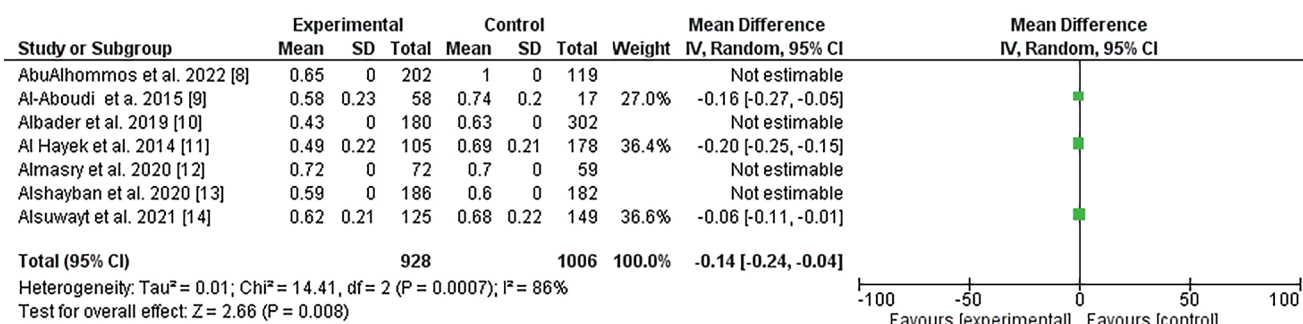


Figure 2: Forest Plot of quality of life among males and females with diabetes in Saudi Arabia

crepancies. Any discrepancies were solved by consensus.

### Data analysis:

The RevMan system for meta-analysis (version 5.4) was used, and the data were all continuous (quality of life score out of a hundred). The random effect was used to compare the quality of life between women and men because of the substantial heterogeneity observed. Funnel plots were used to assess lateralization. A P-value of < 0.05 was considered significant.

## RESULTS

Seven studies including 1862 patients were pooled [8-14]. The studies were all cross-sectional, and showed lower quality of life among women with type 2 diabetes with significant differences (odds ratio, -0.14, 95% CI, -0.24-0.04, P-value for overall effect, 0.008, and the Chi-square, 14.41). There was significant heterogeneity between the studies,  $I^2 = 86%$ , P-value for heterogeneity, 0.0007. Figure 2.

## DISCUSSION

Quality of life determinants is vital for decision-making and better diabetes holistic care. The relationship between gender and quality of life is controversial. This meta-analysis found lower quality of life scores among women with type 2 diabetes with significant statistical significance (odds ratio, -0.14, 95% CI, -0.24-0.04, P-value for overall effect, 0.008 and the Chi-square, 14.41). A pooled analysis published in Germany found a negative impact of type 2 diabetes in women with type 2 diabetes<sup>15)</sup> in line with the present meta-analysis in which a significantly lower quality of life score was observed among women. The lower quality of life observed might be due to poor glycemic control<sup>16)</sup>. Participation in health education programs may explain the difference. Miksch *et al.* found that men participating in disease management programs had lower quality of life as compared to non-participants. The reverse was observed for women (good quality of life) indicating a gender difference in the response to the program, and the difference is important in future similar programs configuration<sup>17)</sup>. Adherence to physical exercise and checking the blood glucose more frequently was associated with better quality of life, while consuming red meat, depression, diabetes complications, and longer duration of diabetes negatively affected diabetes quality of life<sup>18)</sup>. Diabetes self-management education might be another factor influencing the quality of life among patients with diabetes. However, the evidence is conflicting with some studies that reported a benefit<sup>19)</sup>, and others showed no effect<sup>20)</sup>. An interesting study showed that difficulty in handling obesity among females might explain the lower quality of life among women. In addition, obese females were more likely to suffer from depression<sup>21)</sup>. The duration of diabetes is another factor influencing the quality of life, patients with a new diagnosis were less to have good knowledge of the disease and less likely to adapt to the complex therapeutic regimen<sup>22)</sup>.

The study was limited by the small sample of the included studies and the high heterogeneity observed. The majority were from the Capital. Thus, generalization to the whole Kingdom cannot be insured.

## CONCLUSION

Women with type 2 diabetes in Saudi Arabia showed a lower quality of life compared to their male counterparts. Further larger multi-center studies matched for demographic factors and glycemic control are recommended.

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