# Original Article

## Stages of Grief and Therapeutic Adherence in People with Type 2 Diabetes Mellitus

## *Etapas de duelo y adherencia terapéutica en personas con diabetes mellitus tipo 2*

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***Summary***

**Objective:** To identify the relationship between the stages of grief and therapeutic adherence in people with type 2 Diabetes Mellitus. **Methods:** Cross-sectional and correlational study, with a sample of 179 participants aged 20 to 70 years. Data collection were carried out in health centers in three locations in the state of Oaxaca, Mexico. The Instrument to Measure Diabetic Stages of Grief and the Scale of Adherence to Medications in T2DM were used. Correlation analysis and a multiple linear regression model were performed. **Results:** Mean age 54.5 years (SD = 11.0), schooling was 5.3 years (SD = 3.8) and years with T2DM10.8 (SD = 7.1); 79.3% were women, 30.2% consumed alcohol, 10.1% smoked and 64.8% were overweight/obese. Therapeutic adherence was correlated with denial, negotiation and acceptance. In the linear regression model, only the stages of denial and acceptance were predictors of adherence. **Conclusions:** There is a significant relationship between therapeutic adherence with the stages of grief: denial and acceptance.

**Keywords:** Grief, Adherence, Medication, Type 2 Diabetes Mellitus

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***Resumen***

**Objetivo:** identificar la relación entre las etapas de duelo y la adherencia terapéutica en personas con diabetes mellitus tipo 2 (DM2). **Métodos:** estudio transversal, participaron 179 pacientes de 20 a 70 años de edad. La recolección de datos se realizó en los centros de salud de tres localidades del estado de Oaxaca, México. Se utilizó el instrumento para medir etapas de duelo en diabéticos (IMEDD) y la Escala de Adherencia a los Medicamentos en DM2. Se realizaron análisis de correlación y un modelo de regresión lineal múltiple. **Resultados:** la edad promedio fue de 54.5 años (±11.0), escolaridad de 5.3 años (±3.8) y 10.8 años (±7.1) con DM2; 79.3% fueron mujeres, 30.2% consumía alcohol, 10.1% refirió fumar y 64.8% presentó sobrepeso u obesidad. La adherencia terapéutica se correlacionó con la negación, negociación y aceptación. En el modelo de regresión lineal, solo las etapas de negación y aceptación fueron los predictores de la adherencia. **Conclusiones:** Existe una relación significativa entre la adherencia terapéutica con las etapas del duelo negación y aceptación.

**Palabras Clave:** duelo, adherencia a los medicamentos, diabetes mellitus tipo 2

***Introduction***

Worldwide, 463 million adults between 20 and 79 years of age suffer from diabetes, especially in low- and middle-income countries.[1] Type 2 Diabetes Mellitus (T2DM) accounts for 90% of cases worldwide. In Mexico, the prevalence of diabetes is 10.3% and in the State of Oaxaca it is 10.5%.2 According to the National Health and Nutrition Survey (Ensanut), 67.9% of people with T2DM receive pharmacological treatment,[3] but 68.2% have poor glycemic control.[4] In this regard, therapeutic adherence is considered a key element in the management of the disease.[5]

Therapeutic adherence should start since the diagnosis of T2DM, favoring glycemic control and reduction of hospitalizations; however, during therapeutic adherence there are psychological and behavioral barriers to initiate or maintain this behavior.[5,6] The experience of living with diabetes is associated with worries and mood disorders, generally in a negative way at the beginning of the diagnosis[7] because people go through a grieving process for the loss of their health and for the diagnosis of T2DM, involving a series of reactions and feelings that lead to making adjustments in their lives towards a new reality.[8]

It has been reported that people with T2DM who live in bereavement have poorer glycemic control and quality of life.[9] The denial stage is presented by the absence of severe symptoms,[10] which could lead to a rejection of the medical diagnosis and lead them to continue to undergo confirmatory tests.[11] Others express feelings of fear of dying and uncertainty about the appearance of complications.[12] On the other hand, depression stage has been related to the presence of hyperglycemia[13] and complications of the disease.[10] Finally, there are reports that the acceptance stage improves therapeutic adherence.[14]

Emotional impact of the diagnosis of T2DM and the stages of grief are underestimated in the management of the disease, which could interfere with therapeutic adherence.[15] The presence of a chronic disease such as T2DM requires constant management while maintaining a commitment to medication and adherence to lifestyle change,[16] however, acceptance of the disease is necessary to achieve this.

Therapeutic adherence in T2DM is complex, there are multiple factors that can affect compliance, so it is important to evaluate whether the stages of grief can predict therapeutic adherence and impact disease control. Therefore, the objective is to identify the relationship between the stages of grief and therapeutic adherence in people with T2DM.

***Methodology***

The design of this study was cross-sectional and correlational. The population were people with a previous diagnosis of T2DM between 20 and 70 years of age, living in the towns of Pinotepa de Don Luis, San Antonio Ocotlán and San Juan Bautista de Oaxaca, registered in different health centers of each town. They must be able to read, write and speak Spanish. People in mourning for a family loss or sentimental relationship were excluded. The sample calculated by convenience consisted of 179 patients and was approved by the ethics and research committee of the Nursing School of the Autonomous University of Baja California (Universidad Autónoma de Baja California) with registration number #0191083. Prior to reading and signing the informed consent form; sex, age, marital status, schooling, years with diabetes and blood pressure data were collected, followed by anthropometric measurements: abdominal circumference, weight, height and Body Mass Index (BMI).

Grief stages were measured with the Instrument to Measure Diabetic Stages of Grief (IMDSG).[13] It consists of 31 items with Likert-type response (0-3), grouped into five stages: denial (5 items), anger-rage (6 items), negotiation (5 items),

depression (10 items), and acceptance (5 items). To identify the presence of each stage, the following cut-off points were used: denial (≥ 6), disbelief/anger (≥ 6), negotiation (≥ 7), depression (≥ 12) and acceptance (≥ 11). The reliability obtained by dimensions was .61 to .79. For therapeutic adherence, the Medication Adherence Scale in T2DM was used,[17] consisting of 11 items with a Likert-type response pattern from 1-never to 4-always, with higher scores indicating lower therapeutic adherence. The reliability obtained for this scale was .8[5].

The SPSS 25 version captured and processed the data. Frequencies and percentages, for data reporting, were used for categorical variables and measures of central tendency and dispersion for continuous variables. BMI was classified as 18.5-24.9 k/m$^2$ normal weight, 25-29.9 k/m$^2$ overweight, and ≥30 k/m$^2$ obese. For inferential analysis, the Mann-Withney U test was used for the difference in stages of grief by sex; for correlation the Spearman's Correlation test was used. Finally, a multiple linear regression model was integrated including the stages of grief as independent variables and therapeutic adherence as dependent variable.

### Results

Participants' characteristics are shown in Table 1, where most of the patients were married women, with an average age of 54.5 years and an average of 5.3 years of schooling, which represents incomplete elementary school. It was also reported that 30.2% consumed alcohol and 10.1% had smoking habits, 30.2% had been diagnosed with arterial hypertension; an average systolic pressure of 113.9 mmHg (SD = 13.5) and diastolic of 74.3 mmHg (SD = 10.2) was found. In addition, patients had an average diagnosis of T2DM of 10.8 years and 64.8% were overweight/obese.

In general, according to the stages of grief, 7.3% presented denial, 26.8% anger/incredulity, 19.6% negotiation, 12.8% depression and 58.7% acceptance, the description of the variables are shown in Table 2, where the stage of acceptance presents the highest mean and the stage of denial the lowest. According to sex, women presented higher scores in anger and depression stages (U = 1837, p<.01 and U = 2047, p<.05, respectively). Regarding therapeutic non-adherence, it is low, which represents that people have good compliance in taking their medication.

According to the bivariate correlation analysis, the stages of denial and negotiation were positively correlated with therapeutic non-adherence, while the stage of acceptance was negatively correlated, see Table 3. After the bi-

***Table 1. Participants' Characteristics***

| | M | DE |
|---|---|---|
| Age | 54.5 | 11 |
| Schooling | 5.3 | 3.8 |
| Years with T2DM | 10.8 | 7.1 |
| | % | f |
| Women | 79.3 | 142 |
| Men | 20.7 | 37 |
| Alcohol consumption | 30.2 | 54 |
| Smoke habits | 10.1 | 18 |
| Arterial hypertension | 30.2 | 54 |
| BMI | | |
| Normal weight | 35.2 | 63 |
| Overweight | 39.1 | 70 |
| Obesity | 25.7 | 46 |

Note: M = media, SD = Standard Deviation, f = frequency CAP, BMI = Body Mass Index

***Table 2. Stages of grief description and therapeutic adhesion in person with Type 2 Diabetes Mellitus***

| | M | SD |
|---|---|---|
| Denial | 2.2 | 2.2 |
| Anger | 4.3 | 2.6 |
| Negotiation | 3.9 | 2.1 |
| Depression | 6.9 | 4.2 |
| Acceptance | 10.8 | 2.6 |
| Adherence | 15.9 | 3.4 |

Note: M = Media, SD = Standard Deviation

variate analysis, a multiple analysis was performed using multiple linear regression, and the stages of grief were considered predictors of therapeutic non-adherence. The results show that the stages of denial (β=.304, p<.01) and acceptance (β=-.245, p<.01) were the only predictor variables of therapeutic non-adherence and explained 22.4% of the variance, see table 4.

### *Discussion*

The results of the present study showed that the stages of mourning, denial and negotiation are related to lower therapeutic adherence; this fact has been confirmed by a recent study in the Iranian population.[15] On the contrary, as the person shows acceptance of diabetes, adherence to medications increases, BMI and systolic blood pressure decreases. This is due to the fact that mourning is a process of emotional adaptation to the loss of health, which ends in acceptance,[8] however, during this process feelings of guilt, anger, hopelessness, anguish and uncertainty are experienced and expressed.[12]

According to the stages of grief, in our study, acceptance was the most frequent, similar to that reported in other research conducted in other states of the Mexican Republic, between 2015 and 2019.[13,14,18] This may be related to the years of diagnosis (>10) and as the disease evolves, it favors resignation to the diagnosis, regardless of the cultural and contextual differences where the studies have been conducted. There is also evidence indicating that having family members with the same chronic condition helps people to accept the disease in a shorter time.[11]

According to gender, women presented higher scores in the stages of anger and depression, the latter finding ("depression") coincides with that reported in other studies conducted in Mexico City and the State of Mexico, respectively,[13,14] and is a common disorder in women with T2DM, according to a study conducted in Peru in 2020,[19] which may be related to the challenges they face in daily life at home, due to the various activities they perform, in addition to the actions of taking care of their condition and probably that of others. The American Diabetes Association has even reported that depression in women can be an obstacle to maintaining diabetes self-care.[20] This has enormous consequences, since women must not only focus on their condition but also on the activities that the role of being a woman confers on them in our society even today.

In this study, one of the predictor variables for therapeutic adherence was the denial stage, which coincides with Pedroza-Cosío et.al., who suggest a timely detection of the mourning phase in which people with T2DM find themselves[14]. It was also found that the greater the denial, the lower the therapeutic adherence. Previous studies have shown that people experience a loss of identity when diagnosed with T2DM,

***Table 3. Correlation analysis between studied variables***

| | Denial | Anger | Negotiation | Depression | Acceptance |
|---|---|---|---|---|---|
| Age | | | | 0.196** | |
| Schooling | | | | -0.183* | |
| Year with T2DM | -0.199** | | -0.227** | | |
| BMI | | | | | -0.250** |
| Systolic | | | 0.208** | 0.152* | -0.270* |
| Diastolic | | 0.158* | | | |
| Adherence | 0.310** | | 0.162* | | -0.282** |

Note: *p<0.05, **p<.01

***Table 4. Multiple linear regression model for non-adherence to treatment in people with T2DM***

| | β | p |
|---|---|---|
| Denial | 0.304 | 0 |
| Anger | -0.037 | 0.651 |
| Negotiation | 0.044 | 0.568 |
| Depression | -0.016 | 0.582 |
| Acceptance | -0.245 | 0.002 |
| F | 26.62 | 0 |
| $R^2a$ | 0.224 | |

Note: β = beta, p = significance,
$R^2a$ = adjusted square R

which interferes with acceptance of the disease, compliance with self-care and glycemic control.[20,21] Our results show that people maintain an unhealthy lifestyle, since they continue consuming alcohol and having problems of overweight or obesity.

Finally, acceptance of T2DM was related to better therapeutic adherence, as has been suggested by other authors.[14] Adherence in newly diagnosed individuals helps to improve glycemic control, quality of life and prevent complications.[5,6,22] Therefore, acceptance of the disease should be considered a priority in T2DM, with efforts directed towards the design and implementation of interventions in newly diagnosed individuals.

### *Conclusions*

The most frequently found stage of grief was acceptance. In addition, some correlations of weak magnitude were identified showing that denial is related to lower therapeutic adherence and acceptance to higher adherence, suggesting that these stages could influence therapeutic adherence.

It is important to carry out the evaluation of the stages of grief in the primary and second care level especially in cases with little or no therapeutic adherence in T2DM. It is also essential to develop programs or interventions that help people to accept their disease.

### *Limitations*

The study design does not allow to determine causality or effects in relation to the stages of grief and therapeutic adherence, family support was not evaluated as a factor for adherence, and the type of sampling used limits the generalizability of the results.

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