

## Educating vulnerable communities about diabetes: Can a fotonovela work?

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### Abstract

**Objectives:** This study evaluated the effects of reading different versions of a fotonovela about diabetes in resource-poor settings in South Africa.

**Design:** An experimental study was conducted with 411 participants, comparing a fotonovela with a younger protagonist, a similar fotonovela version with an older protagonist and a no message control condition. Differences between the two fotonovela versions were analysed for two age groups of readers (25–49 years, and 50 years and older).

**Setting:** Community centres in vulnerable communities in the South African provinces of the Western Cape, the Northern Cape and Gauteng.

**Method:** In the experimental conditions, participants completed a questionnaire after reading one of the fotonovela versions. Participants in the control condition answered similar questions without having read a fotonovela.

**Results:** Both fotonovela versions resulted in more diabetes knowledge than the control condition. Limited positive effects were found for attitudes and behavioural intentions. In the younger participant group, age similarity between the protagonist and readers resulted in knowledge gain, while in the older participant group, no such effect was found. In both age groups, no age similarity effects were found for attitudes or behavioural intentions.

**Conclusion:** This study confirms that fotonovelas can be an effective means of health communication. Furthermore, for a narrative on a health topic for which age is relevant, it can be beneficial to choose a young protagonist. For readers from the same age group, the impact of the story on knowledge acquisition may then be greatest, while for older readers, the age of the protagonist does not seem to influence the knowledge effects of the story.

### Keywords

Age similarity, diabetes, fotonovelas, health literacy, narratives, vulnerable communities

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## Introduction

The theme of World Diabetes Day 2022 highlighted the global importance of diabetes education for those living with the disease, healthcare providers and the public (World Health Organization, 2022). This theme is well founded: diabetes education saves lives, mitigates rising prevalence rates and reduces healthcare costs (The Lancet Diabetes & Endocrinology, 2022).

Diabetes education aims to empower persons living with the disease with the knowledge, skills and confidence needed for effective self-management, whether they have type 1 diabetes, type 2 diabetes or gestational diabetes (Powers et al., 2020). For the general public, education enhances awareness of diabetes risk, the condition's severity and its consequences (The Lancet Diabetes & Endocrinology, 2022).

Approximately 537 million people worldwide live with diabetes, and this number is projected to reach 643 million by 2030. Multiple obstacles limit the effectiveness of diabetes education, including participant-related barriers (e.g. reluctance to change behaviour or a disinterest in diabetes education), health system-related and programmatic barriers (e.g. limited numbers of diabetes education specialists) and environment-related barriers (e.g. the broader social determinants of health) (Powers et al., 2020). The need for better strategies to implement diabetes education could hardly be more urgent.

One strategy that may be useful for improving diabetes education involves the use of health-based *fotonovelas*: small booklets that combine posed photographs with simple text, typically depicting everyday stories and situations. Fotonovelas have shown persuasive potential across various health topics, including coronavirus disease 2019 (COVID-19), human papillomavirus (HPV) and depression (Boyte et al., 2014; Gallagher-Thompson et al., 2015; Prayaga and Prayaga, 2020). However, research specifically focused on the use of fotonovelas as part of diabetes education remains limited, and existing studies primarily concentrate on first-world contexts. Unger et al. (2009) conducted a study on a diabetes fotonovela in the USA, and two subsequent studies in the Netherlands have explored the effects of a translated version of the same fotonovela (Duizer et al., 2014; Koops Van't Jagt et al., 2017).

While over three in four adults with diabetes live in low- and middle-income countries (International Diabetes Federation, 2022), no diabetes fotonovela studies have been conducted in the countries hardest hit by the disease. However, there have been some positive signs for the possible effectiveness of health-based fotonovelas among underprivileged communities. Two South African fotonovelas, one addressing sexually transmitted infection (James et al., 2005) and the other focusing on 'tik', the local term for crystal meth (Davis and Jansen, 2020; 2021), have successfully promoted health awareness. It is not yet clear whether a new fotonovela about diabetes can also be successfully tailored for use in South Africa, especially for people in disadvantaged situations. Therefore, we wanted to investigate whether and how such a fotonovela can be used as an effective tool in diabetes education in South Africa.

### *South Africa as study setting*

South Africa bears the highest burden of diabetes in Africa. According to the International Diabetes Federation, in 2021, there were 4.2 million adults aged 20–79 years (more than 11% of the adult population) living with the disease. Alarming, an estimated 45.4% of adults with diabetes in South Africa remain undiagnosed (International Diabetes Federation, 2022). In response, the South African Department of Health has implemented interventions to strengthen diabetes education. For example, Community Health Workers offer integrated health services, including diabetes prevention education, to households and individuals within their coverage areas (Diabetes Alliance, 2023).

While there is growing evidence of the link between limited health literacy and poorer diabetes outcomes (White et al., 2010), limited health literacy affects 84% of the South African population – particularly those of poor economic status and those with low educational levels (Reid et al., 2019). Individuals with low levels of literacy struggle to use printed and written information, hindering their ability to adequately function in society.

Although greater knowledge does not automatically lead to behaviour change, knowledge enhancement is an essential aspect of health education. As demonstrated by the ‘Integrative Model of Behavioral Prediction’ (Yzer, 2012), conscious health behaviours are related to behavioural intentions, which in turn are partially determined by attitudes and underlying beliefs. It is expedient, therefore, to address those attitudes and beliefs. One way to accomplish this could be through health-related fotonovelas.

Health-related fotonovelas have so far been developed primarily for groups with low levels of literacy (Cabassa et al., 2012; Unger et al., 2013). However, as Koops Van’t Jagt et al. (2017) show, such booklets may also be well received by groups with higher levels of literacy, which simplifies dissemination.

### *Similarity between protagonist and receivers*

The use of fotonovelas in persuasive health communication is based on the Entertainment-Education or E-E strategy (Moyer-Gusé and Dale, 2017). This strategy encourages the incorporation of health and other messages into stories (or ‘narratives’), distributed through popular entertainment media with the aim of positively influencing beliefs, attitudes, behavioural intentions and ultimately behaviour.

In a scoping review about the use of narratives in science and health communication, a relatable protagonist was identified as a key feature of successful stories (Dudley et al., 2023). Reading a story with a main character similar to oneself may increase the perceived relevance of the message and facilitate persuasion (Kim, 2019).

However, the effects found in experiments on similarity between the protagonist and the receiver do not lead to unequivocal conclusions. One reason may be, as Ooms et al. (2019) note, that the effects are stronger when the similarity is on a story-relevant dimension rather than on a ‘simple’ demographic characteristic unimportant to the narrative. Demographic similarities, such as age or gender, thus may increase identification but most probably only do so when they are relevant for the topic of the narrative (Hoeken et al., 2016, but see also Cohen et al., 2018).

In Ooms et al.’s (2019) study, similarity was manipulated by using two objective demographic characteristics – gender and age – that were relevant to the topics of their persuasive health stories: testicular cancer and breast cancer. Age similarity (but not gender similarity) in younger participants was shown to positively influence identification with the protagonist, transportation and behavioural intention. For older participants, neither the age nor the gender of the protagonist seemed to matter. Here, almost no differences in persuasive measures were found.

An obvious explanation for the results for age similarity, although one not mentioned by the authors, is that younger readers are particularly good at empathising with another young person. They can use their own experiences to imagine the protagonist’s situation. In contrast, older readers not only have the ability to imagine the situation of an older protagonist but also can recognise a situation of a young protagonist, who is not an age peer. After all, they themselves were young once too. Ooms et al. argue for further research to possibly generalise their findings beyond the specific context of their study.

In the light of these findings, this study had two main goals. First, we wanted to find out if a fotonovela about diabetes would have positive effects on South African readers. For this purpose, we formulated the following hypothesis:

*H1.* Reading a fotonovela about a health topic leads to higher levels of knowledge, attitudes and behavioural intentions than when no such message is read.

Given the relevance of age differences to diabetes symptoms (Healthline, n.d.), and in view of the outcomes of the study by Ooms et al. (2019), we wanted to further investigate whether younger and older readers would respond differently to protagonists of different ages. We formulated the following hypothesis:

*H2.* In young readers, age similarity of the reader to that of the protagonist has a positive influence on the effects of a fotonovela about a health topic, while in older readers, age similarity of the reader to that of the protagonist does not influence those effects.

## Methods

### Study design

This study utilised a post-test only between-participants design with two experimental conditions and a control group. For the experimental conditions, two fotonovelas were developed: one with a younger protagonist and one with an older protagonist. To identify the possible effects of age similarity, in both experimental conditions, outcomes for two age groups (25–49 years, and 50 years and older) were compared.

### Materials

In collaboration with medical experts from the Department of Health and Wellness of the South African province of the Western Cape, we developed two English-language fotonovela versions of *Gertie's Big Secret* (Gertie being the younger or the older protagonist). Both versions were translated into Afrikaans and isiXhosa, two of South Africa's other official languages. Self-administered questionnaires were used to collect data. Participants were allocated the materials in the language version they preferred. For images of the covers of the English-language versions of the fotonovela, see Figure 1.<sup>1</sup>



**Figure 1.** The covers of the English-language versions with a younger and an older protagonist.

The two fotonovela versions mirrored each other, apart from the inclusion of a younger or older protagonist, whose roles were played by different actors. The age gap between the younger protagonist (34 years old) and the older protagonist (55 years old) was 21 years (actual ages of actors). The protagonist's age was mentioned on page 1 of the story, where she introduces herself to the reader ('Hi, I am Gertie. I am 34 years old', or 'Hi, I am Gertie. I am 55 years old').

The first 28 pages of the full-colour booklet described Gertie's struggle to accept her diabetes diagnosis. In the storyline, eight core health messages were repeated (e.g. 'You can live a full, productive life with diabetes' and 'Anybody can develop diabetes if they do not take proper care of yourself'). The last four pages contained a Q&A section with more information on the core messages and some additional information (e.g. answering the questions, 'If I have diabetes, when must I go to the clinic or hospital urgently?' and 'Where can I find out more about diabetes?').

We focused on communicating health information about type 2 diabetes as it accounts for more than 90% of diabetes cases worldwide (Sahadew et al., 2022). However, the educational materials used in this study also included some information about type 1 diabetes and gestational diabetes.

## Participants

Our study was conducted in community centres in previously disadvantaged areas in the Western Cape, Northern Cape and Gauteng provinces. Participants were asked to indicate what gender they identified with and what their home language was. We also asked questions to determine what age group they belonged to, their level of health literacy and their diabetes experience (self or family).

## Procedure

After a field worker had explained what the study was about and written informed consent had been obtained, participants who volunteered were randomly assigned to either one of the experimental conditions or the control condition. In both experimental conditions, participants first read the fotonovela version with the younger or the older protagonist and then completed the questionnaire. Participants in the control condition answered the same questions (excluding questions related to age similarity) without reading the fotonovela. Then, if time allowed, the participants in this group were given a fotonovela to read.

## Measures

**Age categories.** Given the changes in symptoms of type 2 diabetes after the age of 50 years (Healthline, n.d.; Werfalli et al., 2018), we decided to define 'younger participants' as younger than 50 years and 'older participants' as 50 years and older. As prevalence figures from a systematic review and meta-analysis in South Africa show that type 2 diabetes rarely affects people younger than 25 years (Pheiffer et al., 2021), this cohort was excluded from our study. Other than the age limit of 25 years, no other exclusion criteria were used.

**Health literacy categories.** To measure participants' levels of health literacy, we selected one of the three items from Chew et al. (2004, 2008), which can be used to detect inadequate health literacy. We used the item that was closest in content to the task our participants had to perform: the question 'How often do you have difficulty learning about your medical condition because you have difficulty understanding written information?'. Following Fransen et al. (2011), we categorised the level of health literacy as 'low' when participants answered 'Always', 'Often' or

'Sometimes'. When their answer was 'Occasionally' or 'Never', the level of health literacy was considered 'high'.

*Diabetes experience (self or family).* Diabetes experience (self or family) was measured by responses to two questions: did the participants have diabetes themselves ('Yes, No, I am not sure'), and did a biological family member such as a parent, sibling or child have diabetes ('Yes, No, I am not sure').

The following dependent variables were measured:

- Perceived similarity. In the experimental conditions ( $n=271$ ), perceived similarity was measured using part of the 'homophily' scale of McCroskey et al. (1975): 'X thinks like me', 'X behaves like me' and 'X is like me'. A scale from 1 to 5 was employed: 'Strongly disagree, Disagree, Neither agree or disagree, Agree, Strongly agree'. Cronbach's  $\alpha$  was .88.
- Diabetes knowledge. Diabetes knowledge was measured with 20 'true or false' statements. Seven items were adapted from Unger et al. (2009) and Koops Van't Jagt et al. (2017); the other items were researcher-designed. The information in these 13 items was confirmed by medical experts from the Department of Health and Wellness of the province of the Western Cape. There were 12 true statements and 8 false statements, for example, 'People with diabetes may suffer from fatigue' (true) and 'Diabetes occurs only in old people' (false). The scale ran from 0 to 20.
- Attitudes. We measured attitudes towards starting conversations about diabetes. A meta-analysis by Jeong and Bae (2017) on the effects of campaign-generated conversations concluded that such conversations have a positive, albeit small, effect on inducing campaign-related outcomes (see also Davis and Jansen, 2021). Both attitudes ('To speak to a doctor or a nurse about my risk for diabetes, is something I . . .' and 'To speak to a family member or friend who may be affected by diabetes, is something I . . .') were measured on a scale from 1 to 5: 'Do not feel strongly about at all, Do not feel strongly about, Feel neutral about, Feel strongly about, Definitely feel strong about'.
- Behavioural intentions. Behavioural intentions were assessed with five items adapted from Unger et al. (2009) and Koops Van't Jagt et al. (2017). Participants were asked if they intended – over the next 6 months – to eat more fruit, to eat more vegetables, to exercise more regularly, to talk to a doctor or a nurse about their risk for diabetes, and to talk with a family member about how to prevent diabetes. All intentions were measured on a scale from 0 to 2 ('No, Do not know, Yes').

Because of content differences between the two attitudes and between the five intentions measured, all attitude and behavioural intention items were analysed separately.

### Statistical analyses

To test  $H1$ , first, a one-way analysis of variance (ANOVA) was conducted, with *Condition* as independent variable and *diabetes knowledge* as dependent variable. A second ANOVA tested whether the effect of fotonovela version on *diabetes knowledge* was qualified by interaction effects. Here, *Condition*, *Gender*, *Home Language*, *Level of Health Literacy* and *Diabetes Experience (self or family)* acted as independent variables.

To examine the effects of reading a fotonovela on *attitudes* and *behavioural intentions*, first, a multivariate analysis of variance (MANOVA) was conducted with *Condition* as independent variable and all seven *attitudes* and *behavioural intentions* as dependent variables. A second MANOVA

tested whether there were interaction effects of *Condition*, *Gender*, *Home Language*, *Level of Health Literacy* and *Diabetes Experience (self or family)* on *attitudes* and *behavioural intentions*.

To test *H2*, we examined the effects of actual age similarity between the protagonist of a fotonovela and its readers on *perceived similarity*, *diabetes knowledge*, *attitudes* and *behavioural intentions*. Possible interaction effects of *Condition* and *Age Group* were also investigated. Data from the control condition, in which participants did not read either version of the fotonovela, were not included in these analyses.

First, an ANOVA tested the main and interaction effects of *Condition* and *Age Group* on *perceived similarity*. A second ANOVA tested whether there were interaction effects of *Condition*, *Age Group*, *Gender*, *Home Language*, *Level of Health Literacy* and *Diabetes Experience (self or family)*.

Next, an ANOVA tested the main and interaction effects of *Condition* and *Age Group* on *diabetes knowledge*. A second ANOVA tested whether there were interaction effects of *Condition*, *Age Group*, *Gender*, *Home Language*, *Level of Health Literacy* and *Diabetes Experience (self or family)*.

Finally, a MANOVA tested the main and interaction effects of *Condition* and *Age Group* on *attitudes* and *behavioural intentions*. A second MANOVA tested whether there were interaction effects of *Condition*, *Age Group*, *Gender*, *Home Language*, *Level of Health Literacy* and *Diabetes Experience (self or family)*.

## Ethics approval

This study was approved by the Stellenbosch University's Research Ethics Committee: Social Behavioural and Education Research (Reference: 24280).

## Results

### Participants

In total, 411 participants took part in the study; 243 participants (59.1%) came from the 25–49 years age group, while the 50 years and older age group included 168 participants (40.9%). Of the participants who entered their gender, the majority were women ( $n=324$ ; 80.0%). Most participants ( $n=160$ ; 39.5%) indicated isiXhosa as their home language, followed by Afrikaans ( $n=143$ ; 35.3%) and English ( $n=40$ ; 9.7%); 62 participants (15.3%) indicated another home language; there were 6 missing values.

For 183 of the 403 participants (8 missing cases), the score for the independent variable *Diabetes Experience (self or family)* was positive (45.41%): 72 answered that they themselves had diabetes and 152 answered that a family member had diabetes; 41 participants responded that both they themselves and a family member had diabetes.

Of the 386 participants who answered the question about *Health Literacy* (25 missing cases),  $n=105$  (27.2%) responded such that their level of health literacy was categorised as 'low'; the level of health literacy of the other 281 participants (72.8%) was categorised as 'high'.

### Effects of reading a fotonovela (H1)

*Diabetes knowledge*. The overall *diabetes knowledge* (possible scores 0–20) was  $M=12.55$  ( $SD=4.14$ ). A significant effect of *Condition* on *diabetes knowledge* was found:  $F(2,406)=13.12$ ;  $p<.001$ ;  $\eta^2=.061$ . Post hoc least significant difference tests (LSD) revealed that participants who

had read the 'Young Gertie' version of the fotonovela had a significantly higher mean score for knowledge ( $n=112$ ;  $M=13.66$ ;  $SD=3.89$ ) than participants in the control condition ( $n=140$ ;  $M=11.19$ ;  $SD=3.94$ ) ( $p<.001$ ). Participants who had read the 'Older Gertie' version also had a significantly higher mean score ( $n=159$ ;  $M=12.97$ ;  $SD=4.18$ ) than participants in the control condition ( $p<.001$ ). There was no significant difference between the 'Young Gertie' version and the 'Older Gertie' version ( $p=.17$ ).

When *Gender*, *Home Language*, *Level of Health Literacy* and *Diabetes Experience (self or family)* were added as independent variables, no significant interaction effects on diabetes knowledge were found.

*Attitudes and behavioural intentions.* *Condition* had a significant multivariate effect on *attitudes* (possible scores 1–5) and *behavioural intentions* (possible scores 0–2): Wilks'  $\Lambda = .89$ ;  $F(14,726)=3.06$ ;  $p<.001$ ;  $\eta^2=.056$ . Subsequent univariate analyses revealed three significant effects: on *attitude towards speaking about diabetes to a doctor or nurse*,  $F(2,369)=5.88$ ;  $p<.01$ ;  $\eta^2=.031$ ; on *intention to exercise more regularly*,  $F(2,369)=13.69$ ;  $p<.001$ ;  $\eta^2=.069$ ; and on *intention to eat more vegetables*,  $F(2,369)=4.41$ ;  $p<.05$ ;  $\eta^2=.023$ .

For the effect of *Condition* on *attitude towards speaking about diabetes to a doctor or nurse*, post hoc tests (LSD) showed two significant differences. Participants who had read the 'Young Gertie' version of the fotonovela had a significantly higher mean score ( $M=3.78$ ;  $SD=1.08$ ) than participants in the control condition ( $M=3.24$ ;  $SD=1.39$ ) ( $p=.001$ ). Participants who had read the 'Older Gertie' version also had a significantly higher mean score ( $M=3.55$ ;  $SD=1.30$ ) than participants in the control condition ( $p<.05$ ). There was no significant difference between the 'Young Gertie' and the 'Older Gertie' condition ( $p=.17$ ).

For the effect of *Condition* on *intention to exercise more regularly*, post hoc tests (LSD) also revealed two significant differences. Participants who had read the 'Young Gertie' version of the fotonovela had a significantly higher mean score ( $M=1.69$ ;  $SD=0.66$ ) than participants in the control condition ( $M=1.22$ ;  $SD=0.91$ ) ( $p<.001$ ). Participants who had read the 'Older Gertie' version also had a significantly higher mean score ( $M=1.53$ ;  $SD=0.80$ ) than participants in the control condition ( $p<.001$ ). There was no significant difference between the 'Young Gertie' and the 'Older Gertie' condition ( $p=.10$ ).

For the effect of *Condition* on *intention to eat more vegetables*, post hoc tests (LSD) revealed one significant difference. Participants who had read the 'Older Gertie' version of the fotonovela had a significantly higher mean score ( $M=1.75$ ;  $SD=0.63$ ) than participants in the control condition ( $M=1.54$ ;  $SD=0.71$ ) ( $p<.01$ ). The difference between the 'Young Gertie' condition and the control condition tended towards significance ( $p=.06$ ). There was no significant difference between the 'Young Gertie' condition and the 'Older Gertie' condition ( $p=.61$ ).

When *Gender*, *Home Language*, *Level of Health Literacy* and *Diabetes Experience (self or family)* were added as independent variables, no significant multivariate interaction effects were found.

In summary, *H1* was partially supported. Compared to the control condition, both fotonovela versions resulted in more diabetes knowledge. Outcomes in favour of the fotonovela versions were also found for some of the attitudes and behavioural intentions, and not for others.

### Effects of age similarity (H2)

*Perceived similarity.* For participants who read either of the two fotonovela versions, overall *perceived similarity* (possible scores 1–5) was  $M=3.21$  ( $SD=1.10$ ). A significant interaction effect of *Condition* and *Age Group* was found:  $F(1,255)=4.53$ ;  $p<.05$ ;  $\eta^2=.017$ . Younger participants



who had read the 'Young Gertie' version of the fotonovela perceived more similarity with the protagonist ( $M=3.24$ ;  $SD=1.15$ ) than younger participants who had read the 'Older Gertie' version ( $M=3.02$ ;  $SD=1.07$ ). Also, older participants who had read the 'Older Gertie' version perceived more similarity with the protagonist ( $M=3.52$ ;  $SD=1.05$ ) than older participants who had read the 'Young Gertie' version ( $M=3.14$ ;  $SD=1.08$ ). There was no significant main effect of *Condition* ( $p=.58$ ), nor of *Age Group* ( $p=.16$ ).

When *Gender*, *Home Language*, *Level of Health Literacy* and *Diabetes Experience (self or family)* were added as independent variables, no significant interaction effects were found.

**Diabetes knowledge.** In the two fotonovela conditions, there was no significant effect of *Condition* on *diabetes knowledge*. A significant main effect, however, was found for *Age Group*,  $F(1,266)=4.04$ ;  $p<.05$ ;  $\eta^2=.015$ . Younger participants had a more diabetes knowledge ( $M=13.60$ ;  $SD=4.22$ ) than older participants ( $M=12.72$ ;  $SD=3.78$ ). There also was an interaction effect that tended towards statistical significance:  $F(1,266)=3.16$ ;  $p=.08$ ;  $\eta^2=.012$ . Follow-up analyses revealed that in the group of younger participants, the 'Young Gertie' version led to a significantly more diabetes knowledge ( $M=14.41$ ;  $SD=3.81$ ) than the 'Older Gertie' version ( $M=13.02$ ;  $SD=4.42$ ):  $F(1,164)=4.42$ ;  $p<.05$ ;  $\eta^2=.026$ . In the group of older participants, there was no significant difference in *diabetes knowledge* ( $p=.56$ ) between the 'Young Gertie' condition ( $M=12.46$ ;  $SD=3.77$ ) and the 'Older Gertie' condition ( $M=12.90$ ;  $SD=3.81$ ).

When *Gender*, *Home Language*, *Level of Health Literacy* and *Diabetes Experience (self or family)* were added as independent variables, no significant interaction effects were found.

**Attitudes and behavioural Intentions.** In the two fotonovela conditions, *Condition* and *Age Group* had no significant multivariate main or interaction effects on *attitudes* and *behavioural intentions*: Wilks'  $\Lambda=.96$ ;  $F(7,225)=1.40$ ;  $p=.21$ .

When *Gender*, *Home Language*, *Level of Health Literacy* and *Diabetes Experience (self or family)* were added as independent variables, no significant multivariate interaction effects were found.

In summary, *H2* was partially supported. For diabetes knowledge, the effect of age similarity differed between younger and older readers: in the former group, age similarity led to the highest diabetes knowledge score, while no such effect was found in older readers. In both reader groups, however, there were no effects of age similarity on attitudes or behavioural intentions.

## Discussion

Diabetes education has been flagged by various influential stakeholders in the international diabetes space as a key response to help address the worldwide health threat posed by this disease. Health-based fotonovelas have shown promise in earlier, albeit limited research in a first-world context to effectively communicate preventive information about diabetes. This study explored whether fotonovelas about diabetes can also serve as a health education tool in less privileged settings that are most vulnerable to the effects of diabetes. Moreover, this study served to investigate how age similarity of the protagonist in a fotonovela to that of the reader may affect the story's effectiveness.

We evaluated the effects of reading two different fotonovela versions (one with a younger protagonist and the other with an older protagonist) on perceived similarity to the protagonist, diabetes knowledge, attitudes and behavioural intentions among participants from different age groups and with different health literacy levels.

Regarding diabetes knowledge, we found that participants in both fotonovela conditions significantly performed better than participants in the control condition. These findings are similar to

what Unger et al. (2009), Duizer et al. (2014) and Koops Van't Jagt et al. (2017) found in diabetes-related fotonovela studies performed in a first-world context.

In line with what Unger et al. (2009) and Duizer et al. (2014) found, but in contrast to the results of Koops Van't Jagt et al. (2017), we also found effects for behavioural intentions, albeit limited. Compared with the control condition, reading a fotonovela resulted in significantly higher scores on intention to exercise more regularly. Intention to eat more vegetables was significantly higher in the 'Older Gertie' condition than in the control condition; the almost significant difference between the 'Young Gertie' condition and the control condition was in the same direction.

We also found that readers of the fotonovelas scored significantly more positively on attitudes towards speaking to a doctor or a nurse about diabetes, compared to the control condition. This finding is of interest, given the relevance of conversations about health messages to changes in beliefs, attitudes and behavioural intentions and ultimately behavioural change (Davis and Jansen, 2021).

Level of health literacy did not appear to have an impact on the effects of reading a fotonovela version. This outcome is in line with the results from Koops Van't Jagt et al. (2017). They found that readers of a Dutch fotonovela about diabetes performed better in a knowledge test than readers of a traditional brochure and participants in a no message control condition. In their study, this outcome was also consistent across different levels of health literacy.

Our study showed that actual age similarity between the protagonist and the reader may be important to how messages are received. As might be expected, both younger and older readers perceived the most similarity to a protagonist from the same age group. With respect to knowledge, however, we found that younger readers benefitted most from health information in the story with a younger protagonist, while there was no such effect of actual age similarity for older readers. It seems that while older readers may empathise most with another older person, they can still relate to young people enough to also be affected by a story about someone from such a different generation. However, just as Ooms et al. (2019) found, for younger readers, a story about another young person proved to work best. The explanation seems straightforward: Young people know what it is like to be young, but they may find it difficult to imagine what it means to be old.

### *Limitations and strengths*

First, to test the effectiveness of the fotonovela format, no comparable health document was used. The study design was already quite complex with two versions of the fotonovela in three languages, with a control condition. Second, participants every so often tended to discuss story content while reading. However, most participants did complete the questionnaires on their own without any discussion. Third, not all participants could read the fotonovela or complete the questionnaire in their home language. Unfortunately, due to time and financial constraints, it was not possible to translate the data collection tools into more than 3 of South Africa's 12 official languages.

In terms of strengths, this study was the first in which a fotonovela about diabetes was developed and empirically tested in an underprivileged and resource-poor context. This study also tested for the first time the effects of age similarity between readers and the protagonist in a story presented as a fotonovela.

### *Implications for research and practice*

This study demonstrates the importance of not only empirically investigating the effects of a specific health message but also applying a theoretical perspective. This satisfies Jansen's (2023) call

to apply the so-called ‘U-turn construction’ when developing professional communication messages. Not only should relevant theoretical knowledge from different disciplines be used to develop a solution to the practical problem, but the effects of the proposed solution should also be tested. If possible, theoretical insights should be developed or evaluated at the same time. In this case, a theoretical suggestion of Hoeken et al. (2016) and Ooms et al. (2019) was supported: The persuasive effects of a story can indeed be enhanced by topic-relevant similarities between the protagonist and the reader.

At a practical level, fotonovelas such as those in this study can complement diabetes education campaigns, as has already been done by the Department of Health of the South African province of the Western Cape. Furthermore, this study shows that differentiating the intended readers according to their health literacy level is not necessary in the wider distribution of this new diabetes fotonovela in South Africa. In addition, and similar to the study of Ooms et al., this study indicates that designers of health-related narratives for a wide audience on a topic for which age is relevant might best choose a younger protagonist.

## Conclusion

This study confirms that fotonovelas can be effective tools in health communication. Furthermore, for a narrative on a health topic for which age is relevant, it can be beneficial to choose a young protagonist. For readers from the same age group, the impact of the story on knowledge acquisition may then be greatest, while for older readers, the age of the protagonist does not seem to influence the knowledge effects of the story.

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## Note

1. Full versions can be accessed at <https://heyzine.com/flip-book/596c75b475.html> and <https://heyzine.com/flip-book/b9aa5b8679.html>.

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