

eHealth Literacy and Its Associated Factors in Patients with Gestational Diabetes Mellitus: A Cross-Sectional Study

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Objective: To assess the level of eHealth literacy and its associated factors among women with gestational diabetes mellitus (GDM), and to inform the development of targeted interventions.

Methods: From December 2024 to March 2025, a total of 239 patients with gestational diabetes mellitus attending the obstetric outpatient clinic of a maternal and child health hospital in Guangzhou were conveniently sampled. Data were collected using a general information questionnaire, the eHealth Literacy Scale for Pregnant Women, the Pregnancy-Related Anxiety Questionnaire, the Edinburgh Postnatal Depression Scale, and the Perceived Social Support Scale.

Results: The mean total eHealth literacy score among patients with gestational diabetes mellitus was 79.05±8.61. Multiple linear regression analysis indicated that age, educational level, frequency of health information searching, anxiety, and perceived social support were influencing factors of eHealth literacy.

Conclusion: The level of eHealth literacy among patients with gestational diabetes mellitus was moderate to high and was influenced by multiple factors. Tailored recommendations for accessing appropriate online health information platforms, based on patients' individual characteristics and needs, may help improve their eHealth literacy.

Keywords: eHealth literacy, gestational diabetes mellitus, health information, associated factors, nursing

Introduction

Gestational diabetes mellitus (GDM) refers to glucose metabolism abnormalities that are first identified or develop during pregnancy.¹ Poor glycemic control may not only lead to adverse pregnancy outcomes, such as preeclampsia, preterm birth, and polyhydramnios, but also increase the risk of neonatal complications, including respiratory distress syndrome, jaundice, hypoglycemia, hypocalcemia, and macrosomia.² Previous research has demonstrated that good self-management ability is beneficial for glycemic control and for reducing maternal and neonatal complications.³ Furthermore, evidence suggests that patients with GDM can improve their self-management capacity by enhancing their level of health literacy, thereby promoting healthier lifestyles and effective glycemic management.⁴

With the rapid development of internet information technology, access to health information has become increasingly diversified, and electronic social media have emerged as important channels for the public to obtain health-related information. Accordingly, the concept of health literacy has gradually extended to eHealth literacy. eHealth literacy refers to an individual's ability to search for, obtain, understand, and evaluate health information from electronic media resources, and to apply the acquired health knowledge to address health-related problems.⁵ In China, pregnant women commonly obtain online health information and services via hospital-based WeChat official accounts, maternal-child health apps, and social media communities. International evidence also shows that pregnant women frequently seek pregnancy-related health information online, while concerns about information quality and evaluation persist.⁶ Moreover, a recent scoping review highlighted that for

women with GDM, the digital health literacy appropriateness of app- and web-based systems is often insufficiently addressed, underscoring the need to consider eHealth literacy in digital health support.⁷ In addition, health information available through electronic media is often complex and of variable quality.⁸ Studies have shown that pregnant women tend to demonstrate relatively low judgment ability and limited trust when seeking health information through electronic media.⁹ Therefore, understanding the current status of eHealth literacy among patients with GDM is essential for improving their ability to appraise health information and enhance self-management.

At present, domestic studies on eHealth literacy have mainly focused on students, older adults, and patients with chronic diseases,¹⁰ whereas research targeting patients with GDM remains limited. In this study, factors potentially associated with eHealth literacy were identified based on the eHealth environmental factors and barrier-related factors described in the Transactional Model of eHealth Literacy (TMeHL).¹¹ Task-oriented factors were operationalized using online health information access routes and sources, whereas user-oriented factors included internet use (years and frequency), sociodemographic characteristics, and perceived social support. Barrier-related factors were assessed across physical (eg, perceived information overload), semantic (eg, perceived semantic ambiguity of online health information), psychological (anxiety and depression), and health-status domains (eg, obstetric history and medication use). Therefore, this study aimed to investigate the level of eHealth literacy and its associated factors among patients with GDM, with the goal of providing a theoretical basis for developing targeted interventions to improve eHealth literacy and enhance self-management ability in this population.

Methods and Analysis

A convenience sampling method was employed to recruit patients with gestational diabetes mellitus (GDM) who attended the obstetric outpatient clinic of a maternal and child health hospital in Guangzhou, China, from December 2024 to March 2025. In total, 239 women with GDM were recruited and included in the analysis. The inclusion criteria were as follows: (1) age ≥ 20 years; (2) participants were pregnant women diagnosed with gestational diabetes mellitus (GDM) in accordance with the Chinese Guideline for the Diagnosis and Treatment of Hyperglycemia in Pregnancy (2022);¹² (3) singleton pregnancy; (4) able to use a smartphone; (5) adequate communication ability. The exclusion criteria included: (1) inability to complete the questionnaire due to hearing, visual, or other impairments; and (2) patients with acute pregnancy complications.

Based on Kendall's rule-of-thumb for sample size estimation,¹³ the sample size was determined to be 5 to 10 times the number of variables. This study had 26 independent variables, requiring a sample size of 130 to 260 cases. Considering a 10% non-response rate, a minimum of 145 cases needed to be included. The final sample of 239 recruited patients not only met but exceeded this requirement, ensuring the analysis possessed sufficient statistical power. The results fell within the statistically recommended range and provided adequate testing power for the regression analysis. This study was approved by the Ethics Committee of Guangdong Women and Children Hospital (No. 202401452).

Data were collected using the following instruments. A general information questionnaire was developed by the researchers based on a literature review and included demographic characteristics (eg, age, educational level, occupation, current residence, and type of medical insurance), clinical information (eg, gravidity, current gestational week, and adverse pregnancy history), and health information acquisition characteristics (eg, years of internet use and frequency of online health information searching). The eHealth Literacy Scale for Pregnant Women, developed by Zhao Yafei et al,¹⁴ was used to assess the level of eHealth literacy among pregnant women. The scale comprises four dimensions: eHealth information acquisition ability, eHealth information evaluation ability, eHealth information interaction ability, and eHealth information application ability, with a total of 22 items. Each item is rated on a 5-point Likert scale ranging from 1 ("never") to 5 ("always"). The total score is calculated as the sum of all item scores, with higher scores indicating higher levels of eHealth literacy. As reported in the original validation study, the scale demonstrated acceptable validity in pregnant populations; therefore, it was considered appropriate for use in women with GDM in the present study. In this study, the Cronbach's α coefficient of the scale was 0.87. Pregnancy-related anxiety was measured using the Pregnancy-Related Anxiety Questionnaire, developed by Xiao Limin et al.¹⁵ The questionnaire includes three dimensions: concern for self, worry about fetal health, and concern about childbirth, with a total of 13 items. Each item is scored from 1 ("no worry") to 4 ("always worried"), yielding a maximum total score of 52. A total score ≥ 24 indicates the presence of anxiety. The Cronbach's α coefficient of the questionnaire in this study was

0.86. The Edinburgh Postnatal Depression Scale (EPDS) was originally developed by Cox et al in 1987¹⁶ and later translated into Chinese by Lee et al in 1998.¹⁷ The EPDS consists of 10 items, each scored on a 4-point scale (0–3 points) using both positively and negatively worded items. The total score ranges from 0 to 30, with a score ≥ 13 indicating depressive symptoms. In this study, the Cronbach's α coefficient of the EPDS was 0.80. Perceived social support was assessed using the Multidimensional Scale of Perceived Social Support (MSPSS), developed by Zimet et al in 1988¹⁸ and translated into Chinese by Jiang Qianjin et al in 2001.¹⁹ The scale comprises three dimensions: family support, friend support, and other support, with four items per dimension and a total of 12 items. Each item is rated on a 7-point Likert scale ranging from 1 ("strongly disagree") to 7 ("strongly agree"), with higher scores indicating higher levels of perceived social support. The Cronbach's α coefficient of the MSPSS in this study was 0.87.

All investigators received standardized training prior to data collection and strictly followed the inclusion and exclusion criteria when recruiting participants. Informed consent was obtained from all participants before questionnaire administration, and standardized instructions regarding the study purpose and questionnaire completion were provided. Completed questionnaires were checked on-site for completeness, and participants were asked to complete any missing items, where appropriate. Questionnaires were primarily self-administered. For participants who had difficulty completing the questionnaire independently, trained research staff provided face-to-face assistance by reading items verbatim and recording participants' responses without interpretation or prompting. To minimise interviewer bias, interviewers followed a uniform script, avoided leading questions or additional explanations, and conducted the survey in a private setting to reduce social desirability bias.

All statistical analyses were performed using SPSS software version 26.0. The study data were approximately normally distributed. Continuous variables were summarized as mean $\pm$ standard deviation and compared using independent-samples *t* tests or one-way analysis of variance, as appropriate. Pearson correlation analysis was used to examine the associations between anxiety, depression, perceived social support, and eHealth literacy. Multiple linear regression analysis was conducted to identify factors associated with eHealth literacy scores among patients with GDM. Multicollinearity was evaluated using variance inflation factors (VIFs); all VIF values were <5 indicating no concerning multicollinearity. A two-sided *P* value < 0.05 was considered statistically significant.

This study is reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines for cross-sectional studies.

Results

A total of 250 questionnaires were distributed, of which 239 were valid and included in the analysis, yielding an effective response rate of 95.6%. The ages of the participants ranged from 22 to 43 years, with a mean age of 32.51 ± 3.95 years. Single-factor analyses showed that total eHealth literacy scores differed significantly by age, pre-pregnancy BMI, educational level, gravidity, parity, years of internet use, frequency of online health information searching, sources of health information, and health information access routes among women with GDM (all $P < 0.05$) (Table 1).

The results of the eHealth literacy scale are presented in Table 2. Among the four dimensions, functional eHealth literacy demonstrated the highest mean item score (4.07 ± 0.48), with a total score of 20.36 ± 2.40 . Evaluative eHealth literacy showed a mean total score of 25.22 ± 3.46 and a mean item score of 3.58 ± 0.52 . Applicative eHealth literacy had

Table 1 General Characteristics of Patients with Gestational Diabetes Mellitus and eHealth Literacy Scores

Variable	Category	n	e-Health Literacy ($\bar{x} \pm s$)	t/F	p
Age (years)	<30	59	82.66 ± 7.94	14.27	<0.001
	30–34	106	80.43 ± 7.72		
	35–39	62	74.35 ± 8.27		
	>39	12	73.42 ± 8.76		
Gestational age	<28 weeks	161	79.40 ± 8.92	0.78	0.38
	≥ 28 weeks	78	78.35 ± 7.95		

(Continued)

Table 1 (Continued).

Variable	Category	n	e-Health Literacy ($\bar{x} \pm s$)	t/F	p
Pre-pregnancy BMI	Underweight	23	80.70±6.66	2.78	0.04
	Normal	142	77.78±8.36		
	Overweight	57	81.37±9.61		
	Obese	17	79.71±8.07		
Residence	Urban	167	79.48±9.25	1.35	0.25
	Rural	72	78.07±6.98		
Educational level	Junior high school or below	28	73.18±7.13	9.94	<0.001
	High school	33	74.88±9.96		
	Technical college/junior college	88	79.15±7.82		
	Bachelor's degree	69	81.87±8.06		
Occupation	Postgraduate or above	21	83.81±6.37	0.82	0.53
	Unemployed	38	77.95±9.11		
	Freelance	34	77.62±8.19		
	Worker/service industry	46	79.93±9.16		
	Enterprise/institution staff	73	80.23±8.35		
	Civil servant	23	79.09±8.93		
	Other	25	77.60±7.94		
Monthly household income (RMB)	≤5000	53	77.00±9.29	2.09	0.10
	5001–8000	68	78.40±8.63		
	8001–10000	49	80.08±7.96		
	≥ 10001	69	80.55±8.29		
Gravidity	1	101	81.39±8.02	6.90	0.001
	2	79	77.71±8.62		
	≥3	59	76.86±8.76		
Parity	0	121	81.05±8.05	8.59	<0.001
	1	92	77.74±8.37		
	≥2	26	74.42±9.61		
History of GDM	No	203	78.84±8.52	0.82	0.37
	Yes	36	80.25±9.14		
Adverse pregnancy history	No	178	79.56±8.92	2.38	0.12
	Yes	61	77.59±7.51		
Medication use	No	222	79.17±8.53	0.57	0.45
	Yes	17	77.53±9.82		
Years of internet use	1–5	18	74.28±8.83	3.80	0.01
	6–10	61	77.34±8.26		
	11–15	113	80.30±8.18		
	≥16	47	80.11±9.25		
Frequency of online health information searching	Never	11	73.18±8.47	12.29	<0.001
	Rarely	25	74.12±8.69		
	Occasionally	107	77.11±7.47		
	Often	83	82.92±8.07		
	Always	13	84.85±8.20		
Sources of health information	1source	61	76.95±9.21	4.71	0.01
	2sources	69	78.10±7.78		
	≥3sources	109	80.83±8.48		
Health information access routes	1route	49	75.47±8.96	8.24	<0.001
	2routes	64	78.05±9.03		
	≥3 routes	126	80.96±7.76		

(Continued)

Table 1 (Continued).

Variable	Category	n	e-Health Literacy ($\bar{x}\pm s$)	t/F	p
Types of health information searched	1 type	30	78.50 $\pm$ 9.71	1.54	0.22
	2 types	62	77.56 $\pm$ 8.46		
	≥ 3 types	147	79.80 $\pm$ 8.41		
Information overload	Yes	135	78.38 $\pm$ 7.35	1.92	0.17
	No	104	79.93 $\pm$ 9.99		
Semantic ambiguity of online information	Yes	92	77.78 $\pm$ 7.94	3.29	0.07
	No	147	79.85 $\pm$ 8.94		

Table 2 Total and Dimensional Scores of the eHealth Literacy Scale Among Patients with Gestational Diabetes Mellitus

Category	Items (n)	Score Range	Total Score ($\bar{x}\pm s$)	Mean Item Score ($\bar{x}\pm s$)
Functional eHealth literacy	5	5–25	20.36 $\pm$ 2.40	4.07 $\pm$ 0.48
Evaluative eHealth literacy	7	7–35	25.22 $\pm$ 3.46	3.58 $\pm$ 0.52
Communicative eHealth literacy	4	4–20	13.03 $\pm$ 2.32	3.26 $\pm$ 0.58
Applicative eHealth literacy	6	6–30	20.44 $\pm$ 2.97	3.41 $\pm$ 0.50
Total eHealth literacy	22	22–110	79.05 $\pm$ 8.61	3.59 $\pm$ 0.39

Table 3 Scores of Pregnancy-Related Anxiety, Depression, and Social Support Among Pregnant Women with Gestational Diabetes Mellitus and Their Correlations with eHealth Literacy

Item	Items (n)	Score Range	Total Score ($\bar{x}\pm s$)	Mean Item Score ($\bar{x}\pm s$)	r	p
Anxiety	13	13–52	22.95 $\pm$ 3.34	1.69 $\pm$ 0.26	–0.45	<0.001
Depression	10	0–30	6.95 $\pm$ 3.58	0.70 $\pm$ 0.36	–0.26	<0.001
Social support	12	12–84	65.31 $\pm$ 6.20	5.44 $\pm$ 0.52	0.51	<0.001

a total score of 20.44 $\pm$ 2.97, with a mean item score of 3.41 $\pm$ 0.50. Communicative eHealth literacy exhibited the lowest mean item score (3.26 $\pm$ 0.58) and a total score of 13.03 $\pm$ 2.32. The overall eHealth literacy score was 79.05 $\pm$ 8.61, with a mean item score of 3.59 $\pm$ 0.39 (Table 2).

Table 3 presents the correlation coefficients between psychological factors, social support, and eHealth literacy. Anxiety was negatively correlated with eHealth literacy ($r=-0.45$, $P<0.001$). Depression demonstrated a negative correlation with eHealth literacy ($r=-0.26$, $P<0.001$). Social support showed a positive correlation with eHealth literacy ($r=0.51$, $P<0.001$).

Multivariate linear regression analysis showed that the model fit the data well ($R^2=0.562$, adjusted $R^2=0.539$, $F=24.195$, $P<0.001$), with no evidence of multicollinearity (all VIFs <5). The results showed that age, educational level, frequency of health information searching, anxiety, and perceived social support were significant predictors of eHealth literacy among women with GDM ($P<0.05$) (Tables 4 and 5).

Discussion

The results of this study showed that the mean total eHealth literacy score among patients with gestational diabetes mellitus (GDM) was 79.05 $\pm$ 8.61. Given that the scale ranges from 22 to 110 (22 items scored 1–5), the theoretical midpoint is 66; thus, the observed mean score was above the midpoint, suggesting a moderate-to-high level in this sample. To further contextualize this finding, a study conducted outside China has also reported relatively high eHealth literacy scores among pregnant

Table 4 Coding Scheme for Independent Variables

Independent Variable	Coding
Age (years)	<30=1; 30–34=2; 35–39=3; >39=4
Pre-pregnancy BMI	Underweight = 1; Normal = 2; Overweight = 3; Obese = 4
Educational level	Junior high school or below = 1; High school = 2; Technical college/Junior college = 3; Bachelor's degree = 4; Postgraduate or above = 5
Gravidity	1=0; 2=1; ≥3=2
Parity	0=0; 1=1; ≥2=2
Years of internet use	1–5years =1; 6–10years =2; 11–15years =3; ≥16years =4
Frequency of information searching	Never = 1; Rarely = 2; Occasionally = 3; Often = 4; Always = 5
Sources of health information	1source=1; 2sources=2; ≥3sources=3
Health information access routes	1 route=1; 2 routes=2; ≥3 routes=3
Anxiety	Entered as original values
Depression	Entered as original values
Perceived social support	Entered as original values

Table 5 Multivariate Analysis of eHealth Literacy Among Patients with Gestational Diabetes Mellitus (n = 239)

Variable	B	SE	Beta	t	p	VIF
Constant	59.361	5.852	–	10.144	<0.001	–
Age	–2.234	0.528	–0.217	–4.23	<0.001	1.353
Pre-pregnancy BMI	0.64	0.532	0.055	1.202	0.23	1.065
Educational level	1.109	0.376	0.144	2.953	0.003	1.221
Gravidity	0.866	0.7	0.081	1.238	0.217	2.187
Parity	–0.568	0.854	–0.045	–0.665	0.507	2.331
Years of internet use	0.713	0.471	0.07	1.512	0.132	1.102
Frequency of information searching	2.091	0.462	0.216	4.527	<0.001	1.172
Sources of health information	0.777	0.512	0.074	1.517	0.131	1.230
Health information access routes	1.008	0.524	0.093	1.924	0.056	1.206
Anxiety	–0.801	0.123	–0.31	–6.51	<0.001	1.174
Depression	–0.123	0.113	–0.051	–1.084	0.279	1.147
Perceived social support	0.378	0.068	0.272	5.542	<0.001	1.244

Note: $R^2 = 0.562$, adjusted $R^2 = 0.539$, $F = 24.195$, $p < 0.001$.

women.²⁰ One possible explanation is that pregnancy may be related to greater health-related vigilance, which may be associated with increased motivation to seek information on glycemic management and pregnancy nutrition. Electronic social media not only serve as important sources of health information but also function as interactive platforms through which pregnant women can share pregnancy-related experiences and feelings.²¹ This bidirectional exchange may be associated with higher eHealth literacy. In addition, hospital-based online pregnancy management services, including GDM educational mini-programs, may be associated with higher eHealth literacy and self-monitoring. Such online management models have been shown to effectively reduce blood glucose levels and improve self-management ability,²² which may be indirectly associated with higher eHealth literacy. Therefore, integrating social media-based exchange with hospital-based digital management may support sustained information use and self-management.

With regard to the dimension-specific mean item scores, functional eHealth literacy was highest, whereas communicative eHealth literacy was lowest. This suggests that although women with GDM can access and use digital information, their capacity for effective online health communication may be limited. This may reflect platform designs that prioritize one-way information delivery and data entry over interactive functions, as well as users' preference for face-to-face consultation and variable information quality across platforms.²³ Evidence from digital maternity care

suggests that meaningful two-way digital interaction may be hindered by barriers such as limited digital skills and language constraints, which can reduce users' willingness or ability to communicate questions and concerns through digital platforms.²⁴ In addition, qualitative evidence indicates that platform usability issues, data security concerns, and limited integration with routine care may further constrain engagement with interactive functions of pregnancy-related digital tools.²⁵ In the Chinese context, qualitative findings on WeChat-based prenatal education also highlight the need for standardized interaction protocols and tailored support for women with limited digital literacy, which may partly explain lower communicative eHealth literacy.²⁶ These findings suggest that healthcare professionals should not only focus on monitoring and recording physiological indicators in patients with GDM but also actively encourage patients to express their health concerns and individual needs.

This study found that age was an influencing factor of eHealth literacy among patients with GDM. eHealth literacy scores differed across age groups, with younger patients generally showing higher eHealth literacy than older patients.²⁷ Younger patients may be more digitally familiar and receptive to new technologies, whereas older patients may rely more on offline prenatal visits and face-to-face communication and experience greater barriers to using eHealth platforms. Moreover, many GDM eHealth platforms are designed around younger users' habits, which may further limit usability for older patients. Therefore, targeted support is warranted to help older patients effectively use digital tools for pregnancy health management, including the integration of brief digital health training modules tailored for older pregnant women to strengthen their ability to access, appraise, and use online health information and services. This study found that educational level was an influencing factor of eHealth literacy among patients with GDM. eHealth literacy scores differed across educational levels, with higher scores observed among patients with higher educational attainment.²⁸ Higher educational attainment may facilitate comprehension and integration of online health information and broaden access to digital resources. Accordingly, tailored strategies are needed to reduce education-related disparities, including strengthening information appraisal and application among highly educated patients and simplifying platform functions and guidance for those with lower educational attainment.

The results of this study indicate that the frequency of health information searching is an influencing factor of eHealth literacy among women with GDM. Women who often or always searched for health information had higher eHealth literacy scores, consistent with the findings reported by Liu and Hao.²⁹ More frequent searching may be associated with greater knowledge accumulation and improve digital navigation skills, which may be related to higher engagement with online health information and supporting self-management behaviors. Previous research has indicated that patients with higher levels of eHealth literacy demonstrate greater initiative in using electronic social media to search for health information, which in turn is more conducive to improving unhealthy health behaviors.³⁰ Therefore, health education should encourage broader and more frequent online information seeking and provide tailored recommendations for credible information channels, thereby improving eHealth literacy.

The results of this study showed that eHealth literacy was negatively correlated with anxiety among women with GDM, suggesting that anxiety may be a risk factor for lower eHealth literacy, which is consistent with the findings reported by Akingbade O.³¹ One possible explanation is that during pregnancy, patients with GDM may experience psychological distress, including anxiety and depressive symptoms.^{32,33} Such distress may reduce patients' capacity to process health information and may be associated with lower capacity to acquire information-seeking and appraisal skills, as well as the application of health knowledge. A previous study reported that pregnant women who seek health information through the internet during pregnancy tend to report lower levels of anxiety.³⁴ This suggests that online resources may complement professional care by helping alleviate anxiety-related distress. Therefore, routine anxiety assessment and targeted psychological support may facilitate women's engagement with eHealth information, and should be integrated with digital literacy interventions to strengthen their ability to access, appraise, and use reliable online health resources. Although depression showed a significant bivariate correlation with eHealth literacy, it was not independently associated with eHealth literacy in the multivariable model.

The results of this study showed that social support was positively correlated with eHealth literacy among women with GDM, suggesting that social support may be a potential facilitating factor for eHealth literacy. A previous study demonstrated an association between eHealth literacy and social support, with higher levels of social support corresponding to higher eHealth literacy scores.³⁵ During pregnancy, women with GDM often have heightened needs for emotional

and practical support, and supportive networks may facilitate access to digital resources and health knowledge sharing. Perceived support from family and peers may strengthen engagement with electronic health information and promote eHealth literacy. Yumei P et al reported that eHealth literacy, social support, and glycemic management decision-making behaviors among patients with GDM were positively correlated, and that social support could indirectly influence glycemic management decisions through eHealth literacy.³⁶ Accordingly, health education should involve family members and leverage peer-support platforms to encourage resource sharing and sustained improvements in eHealth literacy, including the implementation of family-based digital health education to support platform use, information appraisal, and ongoing self-management.

Several limitations of this study should be acknowledged. First, all variables were assessed using self-reported questionnaires, which may be subject to reporting biases such as social desirability bias. Second, the single time-point, cross-sectional design may introduce common method variance and precludes causal inference or establishing temporal ordering; therefore, future longitudinal studies are warranted to clarify the temporal dynamics of the observed associations and to examine potential indirect pathways among psychological factors, perceived social support, and eHealth literacy. Third, requiring participants to be able to use a smartphone may have introduced selection bias by under-representing women with lower digital literacy, potentially inflating the estimated eHealth literacy level and under-estimating variability in the broader GDM population. Fourth, participants were recruited from a single tertiary maternal and child health hospital in the Pearl River Delta region, where digital health resources and information technology adoption are relatively well developed; consequently, eHealth literacy in this sample may be higher than that in community, primary care, or rural settings, which may limit the generalisability of the findings. Additionally, gestational age at recruitment varied, which may further limit generalisability across pregnancy stages, where anxiety and digital behaviours may differ. Finally, the single-center setting and the relatively modest sample size may restrict representativeness; future multicenter studies with larger and more diverse samples are needed to validate these findings, and interventional research should further examine whether improving eHealth literacy translates into better glycemic control and self-management outcomes among women with GDM.

Conclusion

In summary, patients with GDM demonstrated a moderate-to-high level of eHealth literacy. Age, educational level, frequency of information searching, anxiety, and perceived social support were significant influencing factors of eHealth literacy among women with GDM. Clinically, greater attention should be paid to older women with GDM, with tailored guidance on accessing and critically appraising reliable online health information and support for effective use of digital platforms. When developing online health management services, platform design should accommodate older users' needs and usage patterns, and interventions should strengthen patients' information appraisal skills. In addition, routine anxiety assessment and timely psychological support, alongside technological education, may facilitate women's engagement with eHealth information and self-management.

Data Sharing Statement

The original contributions presented in the study are included in the article, further inquiries can be directed to the corresponding author.

Ethics Approval and Consent to Participate

This study complied with the Declaration of Helsinki. This study was approved by the Ethics Committee of Guangdong Women and Children Hospital (approval No. 202401452). All procedures were conducted in compliance with relevant guidelines and regulations. Written informed consent was obtained from all participants prior to their inclusion in the study.

Consent for Publication

Written informed consent was obtained from the patients for publication of this study.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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