Article

Differences Between Users and Non-Users of Dating Apps in Adulthood: Psychological and Social Implications

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Abstract

Since the popularization of dating apps, the scientific literature developed in the last decade still has various limitations that concern both the populations studied and the variables evaluated. Therefore, this study aimed to analyze the use of dating apps among adults (25–50 years) and the relationship between the use of these apps and mental, physical and sexual health and substance use. A total of 1004 adults of both sexes (M = 36.61, SD = 7.16; 50.7% women, 49.3% men) participated in the study, filling out a battery of online questionnaires. A 40% prevalence of dating apps use was found. Men, non-heterosexuals, and single people showed higher use of these apps. No relationship was found between the use of dating apps and mental health (self-esteem, anxiety, depression). On the other hand, a direct association was found between being a dating app user and the consumption of substances (tobacco, alcohol, marijuana, cocaine, mental health medication), concern about physical appearance, and the practice of physical exercise. In addition, app users showed better sexual functioning than non-users. The main finding of the study is that there are no differences in mental health (self-esteem, anxiety, depression) between adult users and non-users of dating apps. The results obtained have significant implications both a psychological and social viewpoint. Therefore, they must be considered when implementing prevention and promotion programs for sexual health.

Keywords: dating apps; adulthood; psychological well-being; sexual functioning; physical appearance

1. Introduction

The latest update of the Dating App Report [1] website indicates that around 350 million people worldwide use a dating app, with Tinder and Bumble being the most popular and most downloaded. It has also been documented that more than ten million people use Tinder daily [2], about 40% of single adults are seeking an online partner [3], and about 25% of new romantic couples formed have emerged through these apps [4]. Thus, if the first applications appeared in 2013, it can be said that in just one decade, dating apps have revolutionized the way of meeting and interacting with potential romantic and/or sexual partners worldwide [5].

The rapid popularization of dating apps has led to numerous studies. However, due to the recentness of the phenomenon, there are still many gaps in the published literature, in addition to many inconclusive results. The first of these refers to the usage prevalence of dating apps. Very diverse results have been found depending on the population evaluated, the applications taken into account, the geographical and cultural context of the studies

and, above all, the method of sample recruitment [6]. It is difficult to analyze such varied results, but this indicates that the usage prevalence of dating apps (current and/or past users) is usually between 30 and 50% of the participants in the studies, almost always young university students [7–11].

There are also many differences in studies examining the usage frequency and duration of dating apps. For example, Sumter and Vandenbosch [10] concluded that 23% of Tinder users logged into the app daily, which decreased to 14% in the study of Strubel and Petrie [12]. At the other end of the spectrum, Chin et al. [13] found that Tinder users connected to the app an average of 11 times a day and spent up to 90 min daily. Barrada and Castro [5], in a sample of young Spanish university students, found that Tinder users logged in around ten times a week and had been using the app for an average of four months.

Most studies find that between 50 and 70% of dating app users have had an offline encounter with another person they met through these apps [10,14–16]. The differences reappear in the number and type of contacts emerging from dating apps. For example, Strugo and Muise [15] concluded that 33% of their participants had found a romantic partner on Tinder, and 52% had had some casual sexual contact with people from the app. But the latter percentage dropped to 18.6% in the study by Sumter and Vandenbosch [10]. According to some studies with young university Tinder users [5,16], they had had casual sex with at least one partner met through the app, with a lower mean number of romantic relationships emerging from these applications.

One of the most prolific research areas related to dating apps is studying why people use them. In recent years, different classifications have been proposed [10,16–18], distinguishing between adaptive motives (e.g., curiosity, entertainment, socializing, relationship-seeking) and others with a negative nuance (e.g., social approval, peer pressure, revenge ex-partner). The findings of these studies and subsequent research examining the reasons for using apps in other geographical and cultural contexts [5,19,20] contradict the stereotype that dating apps are used only, or primarily, for casual sex. In fact, most of the cited studies conclude that although having casual sex is a present motivation, it is not one that participants report the most. People, especially young people (18–25 years), to a greater extent, indicate reasons such as curiosity, passing time/entertainment, or meeting people of their same sexual orientation.

According to the existing literature, it is important to note that the use and reasons for using dating apps depend on some of the participants' sociodemographic characteristics. It seems well-established that men, older youth, people from sexual minorities (especially men who have sex with men), and people who do not have a partner have a higher usage prevalence of dating apps [5,8,10,18,19]. Another relevant sociodemographic variable could be the educational level of dating app users. Some studies, such as the one by Shapiro et al. [21], found a direct relationship between app use and educational attainment. However, as most of the localized studies have focused on university students, comparisons are very few.

Likewise, it seems that men and people from sexual minorities tend to use dating apps to have casual sex to a greater extent than other sociodemographic groups, which report other reasons [6,22]. In any case, these conclusions are associated primarily with young people, as hardly any studies evaluate the reasons for using dating apps in middle-aged and older people. Only one study has been found [23] focused on adulthood, which shows that their dating app usage and motives may differ.

1.1. Dating Apps, Mental and Sexual Health

In recent years, several studies have been published that analyze the relationship between being a dating app user and well-being (e.g., self-esteem) and mental health (e.g., anxiety, depression). However, the few published studies do not analyze the direct relationship between these variables; instead, other variables always mediate and/or modulate this relationship. Several personality variables and their relationship with the use of dating apps have been evaluated [6,8], but the results obtained so far do not allow for clear conclusions to be drawn.

Self-esteem is the most evaluated psychological variable in the use of dating apps [2,18], although, again, the results of the studies are inconclusive. There are many processes in the way dating apps work that can influence self-esteem [24], and they can do so both positively (e.g., high number of matches, feeling desired) and negatively (e.g., lack of matches, ghosting). However, it is unknown whether self-esteem (high/low) is a direct cause or a consequence of the use of dating apps, and further research should be conducted in this area. In the case of self-esteem as a sexual partner, Barrada and Castro [5] found no differences between Tinder users and non-users.

Concern for physical appearance is closely related to self-esteem and emphasized by the very nature of dating apps and the preponderance of appearance and physical attractiveness [6]. Several studies analyze the relationship between being a dating app user and body image or satisfaction [5,25,26], again with inconclusive results. In any case, a direct indicator is needed between the importance people grant to their physical appearance and dating app use (or non-use).

The association between the use of these apps and mental health (anxiety, depression) is also unclear. Some authors conclude that dating apps have a negative influence on mental health [27], but always through mediators. Although there are different processes inherent to the use of these apps that can cause anxiety, such as an excessive number of potential partners [24] or sexual aggression and sexual violence originating in the apps [28,29], the direct relationship between anxiety and/or depression and app usage has not been analyzed: Who is more anxious/depressed: app users or non-users? Is there any direct association between these variables? Positive and negative affect and their relationship with the apps were evaluated [5], finding no differences or very small differences between users and non-users.

Finally, in terms of sexual health, there is some research on the sexological aspects related to dating app usage [30], but above all, based on the associations between app usage and risky sexual behaviors [31,32], and with contradictory results, as shown by Castro and Barrada [6]. No studies have been found that analyze the relationship between dating app usage and sexual functioning, despite how relevant it would be to know this association, given the relevance of adequate sexual functioning for well-being [33].

1.2. Dating Apps, Substance Use and Physical Health

Other study topics are intimately related to some intrinsic characteristics of dating apps and their use today, which should be considered. The first of these is substance use. As stated above, one of the main reasons for using these apps is to have casual sex. It is well documented that there are a higher probability and prevalence of casual sexual encounters in certain recreational environments where there is higher substance consumption [7,34,35]. Therefore, analyzing the relationship between dating app usage and consumption would be relevant.

However, few studies examine this association. The conclusions of those published to date can be summarized as follows: (1) a direct and significant relationship was found between being a dating app user and smoking, in a relationship mediated by the intensity

of use of the apps and the reasons for their use, specifically seeking casual sex [36]; (2) no differences in alcohol consumption were found between dating app users and non-users; the only differences found were according to the reasons for use—those who used apps to find casual sex were more likely to be regular drinkers [37]; and (3) dating app use was related to higher cannabis consumption, with the intensity of use appearing as a mediator. No association was found with the use of other drugs [38]. This is considered an appropriate starting point in a relationship that should be further investigated in greater depth, with different substances (e.g., cocaine, mental health medication) and in different sexual practices (e.g., chemsex and its relationship with dating apps use).

The second relevant issue is the relationship between dating app use and physical exercise. Given the importance of physical appearance in dating apps [6,22] and the expected relationship between their use and the importance that participants grant to physical exercise, this relationship should be analyzed directly.

1.3. The Present Study

The rapid growth in the use of dating apps has led to increased scientific interest in this topic. Increasingly, more studies are focusing on the use, the users, and the correlates of dating apps. However, the literature still has some important limitations and gaps. One of them is that it has focused mainly on one group, young people, especially university students, ignoring other relevant age groups [6,22,23]. Considering that several cited studies found a higher prevalence of dating app use as the young participants grew older (25–30 years and older), studies are needed to analyze how people use dating apps during adulthood. Although some studies have been conducted in recent years analyzing the use of dating apps among adults [23,39,40], the literature is still scarce. To this limitation, the lack of studies that directly examine the relationship between dating app use, health (mental, physical, and sexual), and well-being should be added.

Therefore, the present study has a fourfold objective: (1) to analyze the use of dating apps (prevalence, usage frequency, contacts and relationships, reasons for use) in a sample of adults (25–50 years) from the general population; (2) to analyze the relationship between the use (and non-use) of dating apps and mental and sexual health (self-esteem, concern about physical appearance, anxiety, depression, sexual functioning); (3) to analyze the relationship between the use (and non-use) of dating apps and the consumption of substances (tobacco, alcohol, marijuana, cocaine, mental health medication) and physical exercise; and (4) to assess which of the aforementioned variables can predict the use (encounters and relationships) of dating apps in adults.

2. Materials and Methods

2.1. Participants and Procedure

A nationally representative sample, in terms of sex and age, of adults in Spain, consisting of 1004 participants of both sexes (50.7% women, 49.3% men), aged between 25 and 50 ($M = 36.61$, $SD = 7.16$) was recruited (the only inclusion criterion of the study was being between 25 and 50 years old). Of the participants, 81.8% ($n = 821$) described themselves as heterosexual, 8.6% ($n = 86$) as bisexual, 8.2% ($n = 83$) as homosexual, and 1.4% ($n = 14$) as other sexualities. Due to the small sample size of the non-heterosexual groups, these participants were combined into a sexual minority group (18.2%). Concerning relationship status, 59.5% ($n = 597$) had a romantic partner at the time of data collection, while 40.5% ($n = 407$) did not. Finally, regarding the level of education, 0.3% ($n = 3$) of the participants had no studies, 5.9% ($n = 59$) had basic education, 31.7% ($n = 318$) had intermediate studies, and 62.1% ($n = 624$) had higher studies.

The present study is part of a larger project that aims to analyze the characteristics of the use and the users of dating apps during adulthood. Another study has been published about this project [39], which had different objectives and included only a portion of the participants in this study (dating app users only).

Regarding the procedure, data collection for this study was conducted in June 2024 through the data collection company Netquest. The participants were recruited from the company's panelists' sample to maintain the national representativeness of adults in Spain in terms of sex and age. The survey remained open for 15 days. This procedure was approved by the Ethics Review Board for Clinical Research of the region (PI24/249).

2.2. Measures

2.2.1. Sociodemographic Questionnaire

Participants were asked about their sex (men, woman), age, sexual orientation (heterosexual, homosexual, bisexual, others), relationship status (in a relationship or not), and education level (no formal education, basic, intermediate, high education).

2.2.2. Dating Apps Using Questionnaire

Created ad hoc to obtain information on the use and users of dating apps. Participants were asked if they currently used any dating app. Those who answered yes were asked which one(s) (multiple choice), since when (months; hereafter, "app usage track"), how often (less than once a week, about once a week, between two and six times a week, about once a day, several times a day), average connection time (minutes), and what were the main reasons for their use (entertainment, curiosity, socializing, belongingness, casual sex, romantic partner, revenge ex-partner, sexual orientation, other reasons). In addition, they were asked with how many people they had met on the dating apps: (1) they had had a face-to-face encounter; (2) they had had sexual intercourse; (3) they had had a romantic relationship; and (4) they had had a friendship.

2.2.3. Arizona Sexual Experience Scale (ASEX; [41])

The Spanish validation of Santos-Iglesias et al. [33] was used. The ASEX is composed of five items that assess five basic areas of sexual functioning in men and women: desire, arousal, erection/vaginal lubrication, ability to reach orgasm, and satisfaction with orgasm. The male and female versions differ in the third question ("Can you easily get and keep an erection?"/"How easily does your vagina become moist or wet during sex?"). Items are rated on a scale with six response options, ranging from 1 (*hyperfunction*) to 6 (*hypofunction*). Thus, a lower score on the scale indicates better sexual functioning. Observed reliability (Cronbach's alpha) in the present sample was 0.92 for men and 0.93 for women.

2.2.4. Rosenberg Self-Esteem Scale [42]

The Spanish validation of Martín-Albo et al. [43] was used. This unidimensional scale comprises ten items that assess a global value of self-esteem (e.g., "I feel that I'm a person of worth"). Each item is scored on a 4-point response scale, ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). Observed reliability (Cronbach's alpha) in the present sample was 0.90.

2.2.5. Beck Depression Inventory [44]

The Spanish validation of Sanz et al. [45] was used. This instrument is a 21-item self-reporting questionnaire for evaluating the severity of depression in general and psychiatric populations. Each item references a symptom (e.g., sadness) and typically contains four statements. Respondents choose the statement that best reflects the severity of the symptom over the past two weeks. Observed reliability (Cronbach's alpha) in the present sample was 0.95.

2.2.6. Beck Anxiety Inventory [46]

The Spanish validation of Sanz and Navarro [47] was used. This scale is a 21-item self-report instrument for measuring the severity of anxiety in people of different ages. Respondents indicate how much they have been bothered by each presented symptom (e.g., unable to relax) over the previous week. Each item is scored on a 4-point Likert scale ranging from 0 (*not at all*) to 3 (*severely*). Observed reliability (Cronbach's alpha) in the present sample was 0.95.

2.2.7. Substance Use and Physical Exercise Questionnaire

Participants were asked if they smoked tobacco (if so, how many cigarettes per day), drank alcohol, and used marijuana/cannabis, cocaine, and mental health medication. In all cases, there were three response options: *No*; *Yes, but not every day*; and *Yes, every day*. In addition, participants were asked if they engaged in any form of physical exercise (*No; Yes, occasionally; Yes, regularly*) and if they were concerned about their body image (*No; Yes, increasingly; Yes, a lot*).

2.3. Data Analysis

The analyses were carried out with the statistical analysis program JAMOVI v.2.3 [48]. First, the asymmetry and skewness of variables involved in the study were analyzed to verify if the data follow a normal distribution. Second, people who did not use dating apps were compared with those who did, calculating the descriptive statistics of all the variables. The difference in proportions between the two types of participants was also analyzed, calculating Cramer's V and Cohen's d as estimators of the effect size depending on whether the variables were qualitative or quantitative. Next, the associations between variables were calculated using Spearman's correlations.

After analyzing the differences between dating app users and non-users, frequency analyses were performed only with the sample of app users. Finally, hierarchical regression analyses were also performed with app users to explain the variability in the number of face-to-face encounters, sexual encounters, romantic relationships, and friendships they had had through apps. Hierarchical regression models involve four steps for all criteria: Step 1 included information about app usage tracking. In step 2, sociodemographic information was added. Step 3 included data about the number of apps used and daily time spent on apps. Finally, in step 4, sexual functioning, self-esteem, depression, and anxiety were introduced.

3. Results

Analysis of asymmetry and skewness of variables shows that some variables do not follow a normal distribution, namely sexual orientation (asymmetry = 8.27, skewness = 66.7), consumption of substances like marihuana (asymmetry = 11.8, skewness = 139), cocaine (asymmetry = 11.1, skewness = 121), and mental health medication (asymmetry = 18.0, skewness = 25.0), and sexuality variables: self-esteem as a sexual partner (asymmetry = 6.4, skewness = 44), dissatisfaction with sexual life (asymmetry = 7.5, skewness = 59.8), sexual preoccupation (asymmetry = 8.87, skewness = 80.8), and sexual functioning (asymmetry = 4.7, skewness = 21.8).

The differences between the proportions of dating app users and non-users are shown in Table 1 (Nominal variables) and Table 2 (Continuous variables). As can be seen in this table, there were significant differences in practically all the variables investigated, except for education (χ^2 = 1.99, p = 0.575), self-esteem (t = 0.500, p = 0.617), depression (t = −0.556, p = 0.578), and anxiety (t = −0.840, p = 0.401). Among the app users, there was a greater number of men (χ^2 = 43.1, p < 0.001), sexual minorities (χ^2 = 14.3, p < 0.001), single people

(χ^2 = 210.4, p < 0.001), people who consumed all kinds of substances (tobacco: χ^2 = 14.8, p < 0.001; alcohol: χ^2 = 13.2, p < 0.001; marihuana: χ^2 = 8.2, p = 0.016; cocaine: χ^2 = 13.6, p = 0.001; and mental health medication: χ^2 = 20.1, p < 0.001), who did more physical exercise (χ^2 = 15.9, p < 0.001), were more concerned about their body image (χ^2 = 13.8, p = 0.001), were older (t = −3.158, p = 0.002), and reported better sexual functioning (ASEX: t = 3.262, p = 0.001). In all cases, the effect sizes were considered small except for being involved in a relationship, which had a moderate effect (V = 0.458).

Table 1. Descriptives and differences between apps non-users and users (Nominal variables).

Variable	Levels	Non-Users	Users	χ^2	p	V
		Proportion				
Sex	Male	256	244	43.1	<0.001	0.207
	Female	361	148			
Sexual orientation	Heterosexual	523	298	14.3	<0.001	0.119
	Sexual minorities	89	94			
Education	No	3	0	1.99	0.575	0.045
	Basic	35	24			
	Intermediate	194	124			
	High	380	392			
Relationship	No	138	269	210.4	<0.001	0.458
	Yes	474	123			
Cigarettes	No	477	263	14.8	<0.001	0.121
	Yes, occasionally	48	50			
	Yes, daily	87	79			
Alcohol	No	191	96	13.2	0.001	0.115
	Yes, occasionally	401	266			
	Yes, daily	20	30			
Marijuana	No	563	344	8.2	0.016	0.091
	Yes, occasionally	38	31			
	Yes, daily	7	14			
Cocaine	No	597	366	13.6	0.001	0.117
	Yes, occasionally	10	14			
	Yes, daily	1	8			
Mental Health Medication	No	531	302	20.1	<0.001	0.142
	Yes, occasionally	55	52			
	Yes, daily	26	35			
Physical exercise	No	119	52	15.9	<0.001	0.126
	Yes, occasionally	191	97			
	Yes, daily	302	243			
Body image concern	No	148	57	13.8	0.001	0.117
	Increasingly	327	233			
	A lot	137	102			

Note: Education: No = No formal education; Basic = Primary education, Secondary Education or Basic Educational Training; Intermediate = High School, Intermediate or Advanced Vocational Training; High = University Studies.

The associations between the variables are presented in Table 3, separating app users and non-users. Although app users show very similar associations to non-users in many aspects, there are also notable differences. Focusing on these differences, non-users show significant associations that users do not exhibit, specifically between sex and consumption of alcohol (r = −0.139, p < 0.001), marihuana (r = −0.084, p = 0.038), physical exercise (r = 0.100, p = 0.006), depression (r = 0.104, p = 0.010), and anxiety (r = 0.129, p = 0.001); between age and cigarette consumption (r = 0.098, p = 0.015) and mental health medication (r = 0.092, p = 0.023); between sexual orientation and marijuana use (r = 0.100, p = 0.014), cocaine use (r = 0.120, p = 0.003), and self-esteem (r = −0.115, p = 0.014); between educa-

tional level and cigarette consumption ($r = -0.159$, $p < 0.001$), mental health medication ($r = -0.079$, $p = 0.050$), ASEX ($r = 0.084$, $p = 0.038$), and anxiety ($r = 0.092$, $p = 0.023$); between cigarette consumption and depression ($r = 0.096$, $p = 0.017$); between physical exercise and depression ($r = -0.169$, $p < 0.001$), anxiety ($r = -0.145$, $p < 0.001$), and self-esteem ($r = 0.135$, $p = 0.004$); and between concern about body image and depression ($r = 0.168$, $p < 0.001$), and anxiety ($r = 0.097$, $p = 0.016$).

Table 2. Descriptives and differences between apps non-users and users (Continuous variables).

Variable	M (SD)		*t*	*p*	*d*
Age	36.04 (7.22)	37.49 (7.00)	−3.158	0.002	−0.204
Sexual functioning	40.31 (99.09)	22.72 (49.53)	3.262	0.001	0.211
Self-esteem	31.11 (4.937)	30.91 (5.48)	0.500	0.617	0.038
Depression	11.79 (11.77)	12.22 (11.85)	−0.556	0.578	−0.036
Anxiety	12.45 (11.88)	13.16 (13.53)	−0.840	0.401	−0.056

On the other hand, users showed significant associations between sex and sexual orientation ($r = -0.191$, $p < 0.001$); between age and concern about body image ($r = -0.125$, $p = 0.013$), depression ($r = -0.183$, $p < 0.001$), and anxiety ($r = -0.155$, $p < 0.001$); between education and concern about body image ($r = -0.189$, $p < 0.001$); between being in a relationship and consumption of cigarettes ($r = 0.275$, $p < 0.001$), alcohol ($r = 0.167$, $p < 0.001$), marijuana ($r = 0.295$, $p < 0.001$), cocaine ($r = 0.296$, $p < 0.001$), and mental health medication ($r = 0.183$, $p < 0.001$), and anxiety ($r = 0.152$, $p = 0.002$); between cigarette consumption and concern about body image ($r = 0.144$, $p = 0.004$) and anxiety ($r = 0.159$, $p = 0.002$); between alcohol consumption and concern about body image ($r = 0.116$, $p = 0.021$); between marijuana use and depression ($r = 0.201$, $p < 0.001$), anxiety ($r = 0.226$, $p < 0.001$), and self-esteem ($r = -0.136$, $p = 0.020$); between cocaine use and depression ($r = 0.215$, $p < 0.001$), anxiety ($r = 0.249$, $p < 0.001$), and self-esteem ($r = -0.140$, $p = 0.017$); between the consumption of mental health medication and physical exercise ($r = -0.102$, $p = 0.043$); and between concern about body image and ASEX ($r = 0.141$, $p = 0.005$).

Focusing on the variables related exclusively to app use, it was found that the use of a greater number of apps is associated with sex ($r = -0.218$, $p < 0.001$), sexual orientation ($r = 0.111$, $p = 0.028$), being in a relationship ($r = 0.218$, $p < 0.001$), and consumption of alcohol ($r = 0.132$, $p = 0.009$), cocaine ($r = 0.156$, $p = 0.002$), and mental health medication ($r = 0.130$, $p = 0.010$). A long app usage track was related to sex ($r = -0.198$, $p < 0.001$), age ($r = 0.193$, $p \leq 0.001$), sexual orientation ($r = 0.156$, $p = 0.002$), being in a relationship ($r = 0.114$, $p = 0.024$), cigarette smoking ($r = 0.100$, $p = 0.049$), and the number of apps used ($r = 0.201$, $p = < 0.001$). Time spent daily on dating apps was associated with sexual orientation ($r = 0.114$, $p = 0.024$), education ($r = -0.102$, $p = 0.044$), being in a relationship ($r = 0.319$, $p < 0.001$), consumption of cigarettes ($r = 0.106$ $p = 0.035$), alcohol ($r = 0.132$, $p = 0.009$), marijuana ($r = 0.174$, $p < 0.001$), cocaine ($r = 0.216$, $p < 0.001$), and mental health medication ($r = 0.183$, $p < 0.001$), depression ($r = 0.154$, $p = 0.002$), anxiety ($r = 0.151$, $p = 0.003$), self-esteem ($r = -0.123$, $p = 0.036$), number of dating apps used ($r = 0.206$, $p < 0.001$), and length of app usage track ($r = 0.217$, $p < 0.001$).

Table 3. Associations between variables.

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Sex	–	−0.251 ***	−0.033	−109 **	−0.084 *	−0.034	−0.139 ***	−0.084 *	−0.013	0.034	−0.110 **	0.100 *	0.334 ***	−104 **	0.129 **	−0.065		
2. Age	−0.191 **	–	−0.078	−0.209 ***	0.006	0.098 *	−0.010	−0.022	−0.005	0.092 *	−0.019	−0.052	−0.118 **	−0.045	−0.075	−0.093 *		
3. Sexual orient.	−0.129 *	−0.044	–	0.007	0.056	−0.017	0.093 *	0.100 *	0.120 **	0.074	0.021	0.038	−0.075	−0.001	0.042	−0.115 *		
4. Education	0.117 *	−0.135 **	0.093	–	0.060	−0.159 ***	0.040	−0.042	−0.009	−0.079 *	0.162 ***	0.072	0.084 *	−0.041	−0.092 *	0.044		
5. Relationship	−0.141 *	−0.040	0.019	0.011	–	−0.022	0.016	0.044	0.044	0.039	−0.009	0.015	−0.106 **	−0.030	0.008	0.023		
6. Cigarettes	0.001	−0.005	0.023	−0.044	0.275 ***	–	0.212 ***	0.260 ***	0.205 ***	0.172 ***	−0.054	−0.041	−0.034	0.096 *	0.074	−0.036		
7. Alcohol	−0.034	−0.079	0.124 *	0.060	0.167 ***	0.361 ***	–	0.194 ***	0.133 ***	0.105 **	0.046	0.021	−0.060	0.061	0.080 *	−0.009		
8. Marijuana	0.003	−0.103 *	−0.001	−0.004	0.295 ***	0.427 ***	0.280 ***	–	0.248 ***	0.205 ***	0.003	−0.011	−0.058	0.073	0.065	−0.055		
9. Cocaine	−0.051	−0.080	0.020	−0.042	0.296 ***	0.205 ***	0.256 ***	0.563 ***	–	0.088 *	−0.006	−0.014	−0.023	0.038	0.044	−0.013		
10. Ment. H. Med.	0.081	0.016	0.034	0.059	0.183 ***	0.212 ***	0.185 ***	0.345 ***	0.290 ***	–	−0.066	0.003	0.051	0.262 ***	0.290 ***	−0.162 ***		
11. Physical exerc.	−0.048	−0.050	−0.036	0.223 ***	0.083	0.003	0.025	−0.012	−0.021	−0.102 *	–	0.151 ***	−0.098 *	−0.169 ***	−0.145 ***	0.135 **		
12. Body im. conc.	0.133 **	−0.125 *	−0.015	0.189 ***	0.144 **	0.144 **	0.116 *	0.054	0.083	0.016	0.146 **	–	0.005	0.168 ***	0.097 *	−0.067		
13. Sexual funct.	0.288 ***	−0.153 **	−0.084	0.025	−0.026	−0.026	−0.041	−0.043	0.006	0.011	−0.106 *	0.141 **	–	0.204 ***	0.189 ***	−0.241 ***		
14. Depression	0.055	−0.183 ***	0.017	−0.096	0.088	0.088	0.088	0.201 ***	0.215 ***	0.370 ***	−0.181 ***	0.034	0.277 ***	–	0.700 ***	−0.563 ***		
15. Anxiety	0.066	−0.155 **	0.059	−0.026	0.152 **	0.159 **	0.183 ***	0.226 ***	0.249 ***	0.407 ***	−0.076	0.044	0.265 ***	0.751 ***	–	−0.500 ***		
16. Self-esteem	0.057	0.239 ***	−0.049	0.051	0.028	0.009	−0.006	−0.136 *	−0.140 *	−0.207 ***	0.104	−0.015	−0.283 ***	−0.596 ***	−0.511 ***	–		
17. Apps	−0.218 ***	0.080	0.111 *	0.018	0.218 ***	0.091	0.132 **	0.093	0.156 **	0.130 *	−0.038	0.044	−0.067	0.018	0.024	0.044	–	
18. App us. track	−0.198 ***	0.193 ***	0.156 **	−0.015	0.114 *	0.100 *	0.032	−0.042	0.065	0.054	0.003	−0.048	−0.010	−0.048	−0.056	−0.029	−0.201 ***	–
19. Daily in apps	−0.083	0.039	0.114 *	−0.102 *	0.319 ***	0.106 *	0.132 **	0.174 ***	0.216 ***	0.183 ***	−0.031	0.031	−0.015	0.154 **	0.151 **	−0.123 *	0.206 ***	0.217 ***

Note: Sex: 0 = male; 1 = female; Sexual orientation: 0 = Heterosexual; 1 = Sexual minorities; Relationship: 0 = no; 1 = yes; Cigarettes, Alcohol, Marijuana, Cocaine, and Mental Health Medication: 0 = does not consume; 1 = consumes occasionally; 2 = consumes daily; Physical exercise: 0 = no; 1 = occasionally; 2 = daily; Body image concern: 0 = no; 1 = increasingly; 2 = a lot; Sexual functioning; Apps: number of dating apps used; App usage track = Length of time using apps, in months; Daily time in apps: Daily time spent on dating apps, in minutes. The data above the diagonal refer to non-users of dating apps, while the data below the diagonal refer to dating app users. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

　　　The profiles of app users are described in Table 4 (behaviors) and Table 5 (outcomes). Regarding the apps used, the vast majority used Tinder (81.4%), followed by Badoo (30.9%) and Bumble (23.7%). In terms of the number of apps used, most used a single app ($M = 1.96$, $SD = 1.20$). There are diverse reasons for using dating apps: the main ones are meeting people (60.7%), achieving a stable relationship (52%), having fun (48.0%), and casual sex (47.7%). Regarding the app usage track, most participants had been using apps for more than four years ($M = 49.08$ months, $SD = 45.41$ months). The average time they spend daily on these apps is between 61 and 90 min ($M = 75.96$, $SD = 122.36$). In terms of the results of the use of apps, the participants had an average of 12 face-to-face encounters ($M = 12.30$, $SD = 20.30$), 8 sexual relationships ($M = 8.20$, $SD = 18.1$), 1 or no couple relationships ($M = 1.06$, $SD = 5.12$), and more than 3 friendships ($M = 3.07$, $SD = 6.96$).

Table 4. Description of dating app users (behaviors).

Variable	Levels	*n* (%)
Apps used	Tinder	319 (81.4%)
	Badoo	121 (30.9%)
	Bumble	93 (23.7%)
	Grindr	66 (16.8%)
	Meetic	61 (15.6%)
	AdoptaUnTío	28 (7.1%)
	OkCupid	26 (6.6%)
	Others	56 (14.3%)
Numbers of apps used	1	170 (43.7%
	2	130 (33.4%)
	3	59 (15.2%)
	4	17 (4.4%)
	5+	13 (3.3%)
Motives to use apps	Meet people	238 (60.7%)
	Stable relationship	204 (52.0%)
	Entertainment	188 (48.0%)
	Casual sex	187 (47.7%)
	Curiosity	127 (32.4%)
	Find people with the same sexual orientation	99 (25.3%)
	Sense of belonging	23 (5.9%)
	Revenge towards a former partner	17 (4.3%)
	Other reasons	19 (4.8%)
Apps usage track ($M = 49.08$, $SD = 45.41$)	Up to 12 months	78 (19.9%)
	13–24 months	50 (12.8%)
	25–36 months	77 (19.6%)
	37–48 months	42 (10.7%)
	49+ months	145 (37.0%)
Daily time spent on dating apps ($M = 75.96$, $SD = 122.36$)	Up to 30′ min	160 (40.8%)
	31–60′ min	89 (22.7%)
	61–90′ min	66 (16.9%)
	91–120′ min	22 (5.6%)
	120′+ min	55 (14.0%)

　　　The last analyses used hierarchical regression models to explain the results of dating app use, which included face-to-face and sexual encounters and romantic and friendship relationships. In all cases, the variables were introduced in the same order: in the first step, app usage track was introduced as a control variable because the longer the participants had been using this type of application, the more likely they were to have obtained results; secondly, sociodemographic variables such as sex, age, sexual orientation, educational level, whether or not they were in a relationship, substance use (cigarettes, alcohol, marijuana,

cocaine and mental health medication), whether they engaged in physical exercise, and their concern about body image; fourth and finally, self-esteem, depression, and anxiety.

Table 5. Description of dating app users (outcomes).

Variable	Levels	*n* (%)
Amount of face-to-face encounters (*M* = 12.30, *SD* = 20.30)	0	33 (8.4%)
	1	30 (7.7%)
	2	48 (12.2%)
	3	28 (7.1%)
	4	19 (4.8%)
	5	44 (11.2%)
	6	29 (7.4%)
	7	10 (2.6%)
	8	14 (3.6%)
	9	4 (1.0%)
	10	37 (9.5%)
	11+	96 (24.5%)
Amount of sexual relationships (*M* = 8.20, *SD* = 18.1)	0	78 (19.9%)
	1	54 (13.8%)
	2	68 (17.4%)
	3	35 (8.9%)
	4	23 (5.9%)
	5	37 (9.4%)
	6+	97 (24.7%)
Amount of romantic relationships (*M* = 1.06, *SD* = 5.12)	0	199 (50.8%)
	1	112 (28.6%)
	2	55 (14.0%)
	3	17 (4.3%)
	4+	9 (2.3%)
Amount of friendships (*M* = 3.07, *SD* = 6.96)	0	122 (3.1%)
	1	74 (18.9%)
	2	67 (17.1%)
	3	41 (10.5%)
	4+	88 (22.4%)

Table 6 shows the results of face-to-face and sexual encounters. Regarding face-to-face encounters, the third and last step of the model was significant. Therefore, 31.1% of the variance in the number of face-to-face encounters was explained by app usage track ($b = 0.150$, $p < 0.001$), sex ($b = -5.029$, $p = 0.025$), sexual orientation ($b = 9.807$, $p < 0.001$), education ($b = 6.794$, $p < 0.001$), physical exercise ($b = -3.553$, $p = 0.018$), and daily time spent on dating apps ($b = 0.061$, $p < 0.001$).

Concerning the number of sexual encounters, all the steps in the model were significant. Thus, 35.9% of the variance was explained by app usage track ($b = 0.125$, $p < 0.001$), sex ($b = -6.429$, $p < 0.001$), sexual orientation ($b = 9.222$, $p < 0.001$), education ($b = 4.915$, $p = 0.002$), physical exercise ($b = 0.058$, $p < 0.001$), and self-esteem ($b = 0.582$, $p = 0.004$).

Table 7 shows the results of the number of romantic relationships and friendships. In both cases, the last significant step was the third step. In the case of romantic relationships, 68.0% of the variance was explained by the following variables: being in a relationship ($b = -0.982$, $p = 0.046$), cocaine use ($b = 2.914$, $p = 0.003$) and daily time spent on dating apps ($b = 0.046$, $p < 0.001$). Concerning friendships, 52.4% of the variance was explained by sexual orientation ($b = 1.970$, $p = 0.004$) and the daily time spent on dating apps ($b = 0.048$, $p < 0.001$).

Table 6. Multiple regression analysis of outcomes of the dating apps use: encounters.

	Face-to-Face-Encounters			Sexual Encounters		
	R^2_{adj}	F	p	R^2_{adj}	F	p
Step 1	0.160			0.152		
Step 2	0.263	4.31	<0.001	0.285	5.42	<0.001
Step 3	0.334	15.57	<0.001	0.369	18.92	<0.001
Step 4	0.340	1.59	0.177	0.386	2.91	0.022
	Step 3			**Step 4**		
	b [95% IC]	SE	p	b [95% IC]	SE	p
Intercept	−7.023	81.734	0.391	−14.649	9.204	0.113
App usage track	0.141	0.023	<0.001	0.117	0.019	<0.001
Sex	−5.505	21.986	0.013	−6.926	1.880	<0.001
Age	0.038	0.146	0.794	−0.135	0.128	0.290
Sexual orientation	9.921	23.048	<0.001	9.461	1.947	<0.001
Education	7.370	18.082	<0.001	5.334	1.531	<0.001
Relationship	1.364	23.902	0.569	−0.538	2.018	0.790
Cigarettes	−1.302	14.598	0.373	−0.862	1.234	0.486
Alcohol	0.173	20.995	0.934	−0.672	1.762	0.703
Marijuana	2.428	32.095	0.450	3.150	2.715	0.247
Cocaine	−8.298	47.937	0.085	−6.179	4.055	0.129
Mental health medication	−2.071	16.867	0.221	0.287	1.518	0.850
Physical exercise	−12.104	31.020	<0.001	−13.065	2.639	<0.001
Body image concern	−1.129	16.439	0.493	−1.455	1.381	0.293
Apps	−0.113	0.951	0.906	−0.092	0.800	0.909
Daily time on apps	0.062	0.011	<0.001	0.058	0.009	<0.001
Sexual functioning				0.003	0.017	0.840
Self-esteem				0.586	0.197	0.003
Depression				0.038	0.099	0.700
Anxiety				1.173	0.123	1.000

Note: Only the last significant step is displayed. App usage track = Length of time using apps, in months; Sex: 0 = male; 1 = female; Sexual orientation: 0 = Heterosexual; 1 = Others; Relationship: 0 = no; 1 = yes; Cigarettes, Alcohol, Marijuana, Cocaine, and Mental health medication: 0 = does not consume; 1 = consumes occasionally; 2 = consumes daily; Physical exercise: 0 = no; 1 = occasionally; 2 = daily; Body image concern: 0 = no; 1 = increasingly; 2 = a lot; Apps: number of dating apps used; Daily time on apps: Daily time spent on dating apps, in minutes.

Table 7. Multiple regression analysis of outcomes of the dating apps use: relationships.

	Romantic Relationships			Friendship Relationships		
	R^2_{adj}	F	p	R^2_{adj}	F	p
Step 1	0.011			0.026		
Step 2	0.190	6.23	<0.001	0.144	4.27	<0.001
Step 3	0.680	208.92	<0.001	0.524	109.72	<0.001
Step 4	0.675	0.12	0.976	0.523	0.75	0.561
Step 3	b [95% IC]	SE	p	b [95% IC]	SE	p
Intercept	−1.861	1.675	0.267	−1.466	2.412	0.544
App usage track	0.002	0.004	0.576	0.010	0.007	0.122
Sex	0.041	0.450	0.927	−0.400	0.649	0.538
Age	−0.015	0.030	0.613	0.005	0.043	0.903
Sexual orientation	0.475	0.472	0.316	1.955	0.680	0.004
Education	0.068	0.370	0.853	−0.252	0.534	0.637
Relationship	−0.976	0.490	0.047	−1.190	0.705	0.093
Cigarettes	0.222	0.299	0.458	0.345	0.431	0.424
Alcohol	−0.621	0.430	0.150	−0.156	0.620	0.801
Marijuana	−0.237	0.658	0.719	0.101	0.947	0.915
Cocaine	2.914	0.982	0.003	0.868	1.415	0.540
Mental health medication	−0.162	0.346	0.639	−0.291	0.498	0.559
Physical exercise	0.507	0.636	0.426	0.711	0.915	0.438
Body image concern	−0.335	0.337	0.321	−0.300	0.485	0.537
Apps	0.282	0.195	0.149	0.358	0.280	0.204
Daily time on apps	0.046	0.002	<0.001	0.048	0.003	<0.001

Note: Only the last significant step is displayed. App usage track = Length of time using apps, in months; Sex: 0 = male; 1 = female; Sexual orientation: 0 = Heterosexual; 1 = Others; Relationship: 0 = no; 1 = yes; Cigarettes, Alcohol, Marijuana, Cocaine, and Mental health medication: 0 = does not consume; 1 = consumes occasionally; 2 = consumes daily; Physical exercise: 0 = no; 1 = occasionally; 2 = daily; Body image concern: 0 = no; 1 = increasingly; 2 = a lot; Apps: number of dating apps used; Daily time on apps: Daily time spent on dating apps, in minutes.

4. Discussion

In just one decade, dating apps have revolutionized how people meet and interact with potential romantic and/or sexual partners. Parallel to their popularization, extensive scientific literature has been developed on the use of these applications, their users, and their correlates. However, due to the recentness of the phenomenon, this literature has some limitations and inconclusive results. For example, studies have focused on young people, especially university students, ignoring other age groups that also use these apps. Likewise, some associations between app use and users' mental health have not been directly evaluated. Therefore, this study aimed to analyze how dating apps are used among adults (25–50 years): the characteristics of this use, of its users, and the relationship between the use of these applications and mental, physical, and sexual health, as well as with substance use.

Given the results obtained, a main conclusion can be drawn and then qualified. Firstly, there is no relationship between being or not being a dating app user and mental health in adults, as no significant differences were found between users and non-users in self-esteem, anxiety, and depression. Thus, the conclusion of previous studies could be reaffirmed with other variables and in different populations, especially young people [6]. Apps are just another tool that adults use, in this case, to meet and interact with other people, without a negative connotation. However, the differences observed in terms of sexual functioning and substance use qualify this conclusion and raise several questions and topics for discussion.

This is one of the few studies that have been conducted with adults, so the results are hardly comparable to previous research. In another of these studies, Freyth and Jonason [40] recently addressed this topic by analyzing a sample of German-speakers. Their results contrast with those obtained in the present study, as the number of individuals who go on dates and have sex is much higher in Spanish data. A tentative explanation is the existence of cultural differences, but further research is needed to verify this finding.

Similarities and differences regarding the extensive literature published on dating apps and their correlates in young people can be highlighted. In terms of use, adults have been found to: (1) use the same dating apps as young people, with a clear preference for Tinder (more than 80%); (2) use them with a prevalence similar to that of young people (around 40%, see for example [7,10]); (3) they have been using apps for a longer time (average of four years), a logical result, as they have more time to have done so; and (4) they use apps with similar, if not greater, intensity. In the present study, it was found that users are connected to apps for an average time of 76 min, longer than in many studies carried out with young people [10,12], and only less than the 90 min per day found by Chin et al. [13] in their study with men who have sex with men.

Having used apps for a longer time, adult participants have both a higher prevalence and a higher average of encounters and relationships with people they met on dating apps than younger people. Most of the participants had had face-to-face encounters (91.6%), casual sex (80.1%), and friendships (68.9%) with people they met on the apps. Almost half of them (49.2%) had had a romantic relationship that emerged from the apps. Also, the averages of encounters and relationships were much higher than those presented by young people in similar studies [5,10,14–16].

The reasons why they use apps are similar to those reported by young people (see, for example, [17,19,20]). The four most common reasons given by adults were meeting people (60.7%), having a romantic relationship (52%), entertainment (48%), and casual sex (47.7%). Thus, it can be said that adults use apps to meet other people (to meet them and/or to have casual sex) and to establish connections and relationships with them (romantic and/or friendship). Therefore, in addition to the prevalence, frequency and intensity of app use, the regression analyses proposed are considered ideal to evaluate

which of the measured variables allowed predicting encounters (face-to-face, casual sex) and relationships (romantic, friendship) with other people met through the apps.

The most relevant results of these analyses are discussed in each block of results presented below, although at this point, a result that involves the app usage track should be highlighted. This variable works as a logical predictor of encounters (face-to-face and casual sex): the more time you use apps, the more likely you are to have an encounter. However, it was not significant in the case of relationships emerging from apps (only the daily time spent on apps was significant). In other words, some app usage track is required to have an encounter but not for a relationship emerging from an app; in this case, the daily time spent is more relevant.

Regarding the users' sociodemographic characteristics, the profile found in young people is maintained. It was found that younger (in the range of 25–50 years), non-heterosexual, and single men are more likely to be dating app users. In addition, these variables allow for predicting in the same sense the number of encounters, both face-to-face and encounters with casual sexual partners. Educational level was only significant in predicting encounters with other people met on the apps, such that participants with a higher level of education (university students) had more encounters, both face-to-face and for casual sex. This supports the results of studies such as that of Shapiro et al. [21], but only partially because no differences were found in the educational level of users versus non-users.

One of the main conclusions of this study is that there are no differences in mental health and well-being between users and non-users of dating apps. No differences were found in self-esteem, anxiety, or depression. This relevant result supports previous studies that found no differences in positive and negative effects between young app users and non-users [5]. In addition, it suggests that apps are just another tool at their disposal for adults to meet other people. However, the absence of other studies that analyze the direct relationship between app use, mental health, and well-being, together with the fact that the very functioning of the apps can affect self-esteem [24] and mental health [28,29], raises the need to focus on their study.

Another relevant result has to do with sexual health. It was found that dating app users had better sexual functioning than non-users, with the latter presenting more sexual dysfunctions. There are no previous studies analyzing these relevant differences, but it can be intuited, as Barrada and Castro [5] pointed out, that people who are more interested in sex are present in the apps, and they are also healthy and enjoy their sexuality more. If a person's sexual health is not good and/or they have some dysfunction that affects their daily life, they may not expose themselves on an app. This result is supported by the fact that self-esteem directly predicted the number of casual sexual partners met through apps.

Finally, relevant results concerning substance use and physical exercise were obtained. Differences were found between app users and non-users in the consumption of all substances evaluated (tobacco, alcohol, marijuana, cocaine, mental health medication). These results go beyond those of previous studies [36–38], which had found a relationship with tobacco and cannabis use, especially among young people. In the present study with adults, differences were also found regarding alcohol, cocaine, and mental health medication. One of the explanations for this phenomenon may lie precisely in the participants' age because the consumption of cocaine and mental health medication requires more resources—economic and vital—which adults are more likely to have than young people [49,50]. In any case, although it can be intuited that apps are still used in recreational contexts where drugs are more present [7,34,35], these differences should continue to be investigated.

Given the nature of dating apps, the expected direct and significant relationship was found with concern about body image and interest in exercise [6,22].

Limitations and Future Directions

The conclusions of this study should be taken with caution due to some limitations that should be noted. First of all, despite using a Spanish nationally representative sample both by sex and age, the 25–50 age range is very broad, with very different vital moments among the participants, which would surely change the use of dating apps, as well as the motivations and correlates. The choice of this wide age range is due to interest in providing information on groups that have been investigated very little regarding the use of dating applications [39,40]. Regarding the time of data collection (June 2024), it should be noted that the COVID pandemic and the limitations adopted in the post-pandemic stage have caused relevant changes in the way of experiencing sexuality [51]. These changes may have influenced the participants' response, so this work should be compared with future studies.

Concerning the variables measured, sexual health was generalized by assessing only sexual functioning, and physical health only by asking if the participants exercised. However, given the lack of previous studies, it is considered a good starting point. In addition, and although mediating variables could have been used in the analyses (e.g., the motivations for using apps), the study aimed to analyze the direct relationships between the variables. Finally, and as in most of the existing literature on sexuality, this is a cross-sectional study, which only allows us to know the reality at a specific time.

Future studies should continue to investigate the characteristics of the use and users of dating apps during adulthood. Specifically: (1) more studies are needed to compare the prevalence and characteristics of dating apps use among these individuals. From there, it will possible to analyze and interpret whether the differences are due to personal, cultural factors, or a combination of these; (2) to do this, variables from a personality perspective (e.g., neuroticism) must be measured, as well as cultural-contextual variables; (3) since adults have other life goals, their motives for using dating apps should be studied specifically; (4) it is important to assess the relationship –direct, indirect, causal– between the dating app use and mental health and well-being; (5) more research is needed on the role of variables such as sexual functioning and substance use. Related to this, special attention should be paid to sexual practices, often risky, that involve high drug use, such as chemsex [52]. Finally, this topic should be approached from a longitudinal point of view to analyze the participants' evolution in terms of uses, motivations, and correlates of mental health and well-being.

5. Conclusions

The findings of this research are considered an important contribution to the field of study. Firstly, because it is one of the first studies focused on the adult population, which is a relevant group due to their life experience and also because of the moment in which they find themselves. These people may use apps because it is more difficult to find a partner at their age [23]. Second, it provides relevant conclusions about the relationship between dating apps and mental, sexual, and physical health. Specifically, it is important to highlight the relevance of sexual functioning and substance use, variables that have received very little attention and that should be taken into account. Thus, although it can be concluded that dating apps are another tool for meeting and interacting with other people, certain aspects should be highlighted, both related to the participants' age and to these variables.

Therefore, the results obtained may have important implications for various groups: (1) for other researchers in the field, as they provide results that may be comparable in future studies; (2) for professionals working in the field of prevention and promotion of mental and/or sexual health, as they provide information on how apps are used and their correlates in a population that has barely been studied and is the most present in mental

health services; (3) for the users themselves, because this type of study allows learning more about their characteristics; and (4) also for the apps, for the characterization of their users, as well as the differences (and non-differences, also important) found. The ultimate goal, as in any study carried out in this area, is to provide information so that people can have a healthy sexuality oriented toward pleasure and with positive consequences for their mental and physical health.

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