# Body Dysmorphia and Selfie Behavior of Filipino Patients With and Without Mild Acne Vulgaris: A Descriptive Cross-Sectional Study

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## ABSTRACT

**Background** Acne vulgaris (AV) is a chronic inflammatory skin condition that is non-life-threatening but may cause significant psychological morbidity regardless of severity. An extreme case of this is depicted in body dysmorphic disorder (BDD), which is often an undiagnosed condition presenting with excessive preoccupation of perceived flaws not observable by others. With the increasing popularity of social media throughout the years, there has been budding researches exploring its psychological implications, particularly on "selfies" and its possible association with self-image and body dysmorphia.

**Objectives** To compare body dysmorphic symptoms and selfie behavior between patients with mild AV versus those without AV.

**Methods** This is a single-center, cross-sectional study among patients with mild AV and those without AV seen through a teledermatology platform of a tertiary hospital from April to June 2022.

**Results** A total of 207 patients were included in this study – 107 patients with mild AV and 100 patients without AV. A significantly higher proportion of BDD symptoms was seen in patients with mild AV using either Body Dysmorphic Disorder Questionnaire-Dermatology Version (BDDQ-DV) (31%) and Dysmorphic Concern Questionnaire (DCQ) (14%). No significant difference was noted in terms of selfie behavior between the groups.

**Conclusions** BDD symptoms were significantly more prevalent in patients who have mild AV despite having lesions that are negligible and clinically not apparent. This highlights the importance of dermatologists' knowledge that BDD may cause distress and impairment and should be taken into consideration in terms of management. Interestingly, selfie behavior of patients with mild AV and without AV had no significant difference.

**Key words** Body dysmorphia, acne vulgaris, social media, selfie behavior, cross-sectional

## INTRODUCTION

Acne vulgaris (AV) is one of the most common disorders managed by dermatologists around the world. It is a chronic inflammatory skin condition involving the pilosebaceous unit that is commonly seen in adolescents and young adults. Majority of patients are in the teenage years but acne may persist into adulthood.[1] Although it is non-life-threatening

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with no mortality associated, patients may experience significant psychological morbidity[1] as manifested by embarrassment, impaired self-image, low self-esteem, self-consciousness, frustration, and anger.[2]

*Dysmorphia* is defined by the Cambridge dictionary as a "condition in which part of the body is a different shape from normal" and also used to refer to conditions in which a person has false belief that something is wrong with a certain body part.[3] This can refer to certain phenomena such as "body dysmorphia", which is a preoccupation on flaws that are unnoticeable to others.[4] Although not considered as psychiatric disorders on their own,[5] body dysmorphia is highly associated with Body Dysmorphic Disorder (BDD),[6,7] which is defined by the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) as having excessive preoccupation with perceived defects or flaws believed to be ugly, unattractive, abnormal, or deformed that are not observable or appear only slightly to others; manifested by excessive repetitive behaviors such as mirror checking, excessive grooming, skin picking, and reassurance-seeking result to clinically significant distress or impairment in social, occupational, or other important areas of functioning.[4]

AV and its impact on one's quality of life may not always be proportional to its severity as its extent to cause disability is an interplay of personal, social and occupational factors,[8] which means that a patient with multiple inflammatory lesions may report less psychosocial distress when compared to a patient who has mild acne and hides in shame until lesions resolve.[9] An extreme case of such is depicted in BDD which is also associated with comorbid psychiatric conditions such as major depressive disorder, social anxiety disorder, obsessive-compulsive disorder and substance-related disorders.[4] A study among Filipino patients with AV revealed that adolescent patients were 10 times more likely to be at risk for anxiety and depression, which is crucial as perceived flaws in physical appearance at such a stage may have a significant impact on self-image, consequently leading to decreased self-esteem, body image problems, and social withdrawal.[10] In a study by Bowe, Leyden, Crerand, Sarwer & Margolis,[9] 36.1% of patients with mild to barely detectable acne reported the same BDD symptoms as those with moderate to severe acne. Studies suggest that treatment rarely improves overall severity of BDD and that although acne may improve, such a preoccupation may shift to another feature such as the nose or hair[9, 11] or may result in a higher degree of dissatisfaction with subsequent increase in BDD symptoms.[12] BDD is seen in 2% of the general population[13] with the highest prevalence in rhinoplasty setting (20%), general cosmetic surgery (13.2%) and dermatological settings (11.3%).[14]

Over the years, there has been an increasing popularity of social media use among adolescents and young adults[15] making it an integral part of their social life. In Digital 2020: Global Digital Overview, the average social media use in the Philippines is 3 hours and 53 minutes, which is significantly higher compared to the global average of 2 hours and 24 minutes.[16]

Social media is defined as "an online platform which people use to build social networks or social relations with other people who share similar personal or career interests, activities, backgrounds, or real-life connections."[17] It is a web-based form of communication allowing conversations and information sharing among its users in the form of blogs, micro-blogs, social networking sites, video-sharing and photo-sharing sites such as Facebook, Twitter, YouTube, Instagram and TikTok, among others. With today's era of technology and social media, it is the current young generation that has not experienced life without digital technology making them invested in their online identities.[18] It has been suggested that social media, especially those focused on visual content such as Snapchat and Instagram[15] play a role in encouraging negative belief of the body image by promoting universal standards[19] and is associated with increased body dissatisfaction and disordered eating.[20] Specifically, "selfies" or photographs taken by oneself focusing on the face posted on social media have been discussed for a possible correlation with body dysmorphia.[21] The use of selfies increased remarkably since 2012, leading to different areas of interest in terms of research,[22] particularly on the obsessive taking of selfies. Alongside its increase in popularity is an increase in number of cosmetic procedures including facelifts, eyelid surgeries, liposuction and facial rejuvenation in the United States, as presented by stats from the American Society of Plastic Surgeons, with "looking better in selfies on Instagram, Snapchat, and Facebook" noted as incentives for patients to seek such

procedures.[23] With selfies, distress may result due to discrepancy of the real image taken and the ideal photo imagined, readily compared with their peers.[15,21]

The main objective of this study was to compare the body dysmorphic symptoms and selfie behavior between patients with mild AV versus those without AV. The results will highlight other possible factors influencing the disease course of AV, focusing on psychological factors (for example, body dysmorphia, selfie behavior) and help dermatologists address an unseen problem among these patients.

## METHODOLOGY

This is a descriptive cross-sectional study on patients with mild AV and those without AV seen through a tertiary hospital's teledermatology platform from April to June 2022. The Research Ethics Committee has approved of this study.

Patients aged 18-28 years old diagnosed with mild AV by their primary physician and those with no evidence of AV for the control group were included in the study. Patients with the following were excluded: presence of atrophic or dystrophic scars on the face; disfigurement of the face other than acne lesions; inability to read and understand English; and those with known psychological disorders diagnosed by a psychologist or a psychiatrist.

### BDD symptoms screening

The *Body Dysmorphic Disorder Questionnaire-Dermatology Version (BDDQ-DV)* is a modified version of the Body Dysmorphic Disorder Questionnaire with 100% sensitivity and 93% specificity.[24] This is a brief self-report measure assessing the individual's appearance concerns and their impact on functioning developed by Dufresne, Phillips & Vittorio.[24] It uses a Likert scale from 1 to 5 indicating the range of severity of two items. To screen positive in BDDQ-DV, patients must report the presence of preoccupation as well as at least a moderate score of 3 or higher distress or impairment in functioning.[25]

The *Dysmorphic Concern Questionnaire (DCQ)* is a 7-item questionnaire focused on BDD, particularly with concerns on physical appearance and past attempts to deal with the issue. Items are answered on a 4-point scale, with answers ranging from 0 to 3 points. This has been validated as a screening questionnaire for patients who present for cosmetic and non-cosmetic treatments as well. A cut-off score at ≥14 has provided a sensitivity and specificity of 72% and 90.7%, respectively.[25] For the present study, the computed Cronbach's alpha for DCQ was satisfactory at 0.87.

### Selfie behavior

The *Selfitis Behavior Scale (SBS)* was developed by Balakrishnan and Griffiths in 2017. This is a 20-item scale designed to measure an individual's selfie behavior through 6 categories[26]: environmental enhancement (eg, "Taking selfies gives me a good feeling to better enjoy my environment"), social competition (eg, "Sharing my selfies creates a healthy competition with my friends and colleagues"), attention seeking (eg, "I gain enormous attention by sharing my selfies on social media"), mood modification (eg, "I am able to reduce my stress level by taking selfies"), self-confidence (eg, "I feel confident when I take a selfie") and subjective conformity (eg, "I gain more acceptance among my peer group when I take a selfie and share it on social media"). SBS uses a 5-point Likert scale ranging from (1) Strongly Disagree to (5) Strongly Agree and is summed up to get the scores. Higher scores indicate a higher selfie behavior.[26] Joy & Sam (2019) indicated borderline for scores 0-33, acute for 34-67 and chronic for 68-100. The validity and reliability are 0.60 and 0.86, respectively.[27] For the current study, the computed Cronbach's alpha for SBS was satisfactory at 0.95.

## RESULTS

Eligible patients seeking treatment at the University of Santo Tomas Hospital Dermatology Department Teledermatology with mild AV diagnosed by his/her attending physician and those without evidence of AV seeking consult for other concerns not involving the face were recruited for this study. The informed consent form was given as a secure Google form that was sent to the patient via e-mail. The study objectives and procedures were explained to the patient through a phone call. Once the patient had given their consent, the primary physician forwarded the consultation photos of these patients to the primary investigator wherein the absence of

AV or acne severity was re-evaluated based on the Allen and Smith grading system. Once finalized to have mild AV or without evidence of acne, a second Google form containing questionnaires was sent to the patient. A total of 217 patients were invited to participate in this cross-sectional study. Ten were excluded due to the presence of psychological disorder diagnosed by a psychologist or psychiatrist. A total of 107 patients were included in the mild AV group and 100 in the control group. This study population was composed of new and consecutive patients aged 18-28 years old seen through the teledermatology platform of USTH Dermatology from April to June 2022.

Table 1 summarizes the demographic characteristics of patients. The median age was

**Table 1** Demographic characteristics of patients: with vs. without mild AV

| CHARACTERISTICS | All patients (n=207) n (%) | Mild AV | | P value |
|---|---|---|---|---|
| | | With (n=107) n (%) | Without (n=100) n (%) | |
| Age (in years), median | 24 [IQR: 21-26] | 23 [IQR: 20-25] | 25 [IQR: 24-27] | <0.00001[a] |
| Sex | | | | |
| Male | 56 (27) | 27 (25) | 29 (29) | 0.542 [b] |
| Female | 151 (73) | 80 (75) | 71 (71) | |
| Educational attainment | | | | |
| No education | 0 | 0 | 0 | <0.0001 [c] |
| Elementary level/ graduate | 1 (1) | 1 (1) | 0 | |
| High school level/ graduate | 44 (21) | 32 (30) | 12 (12) | |
| Technical/vocational | 7 (3) | 5 (5) | 2 (2) | |
| College level/graduate | 81 (39) | 48 (45) | 33 (33) | |
| Postgraduate | 74 (36) | 21 (20) | 53 (53) | |
| Social media platforms used, % yes | | | | |
| Facebook | 196 (95) | 102 (95) | 94 (94) | 0.671 [b] |
| Instagram | 187 (90) | 95 (89) | 92 (92) | 0.434 [b] |
| Twitter | 126 (61) | 67 (62) | 59 (59) | 0.594 [b] |
| Tiktok | 108 (52) | 69 (64) | 39 (39) | <0.0001 [b] |
| Youtube | 149 (72) | 78 (73) | 71 (71) | 0.761 [b] |
| LinkedIn | 1 (1) | 1 (1) | 0 | 1.000 [c] |
| Netflix | 1 (1) | 1 (1) | 0 | 1.000 [c] |
| Time spent on social media (hours/day), median | 6 [IQR: 4-8] | 6 [IQR: 4-8] | 5 [IQR: 4-8] | 0.2037 [a] |
| Reason for social media use, % yes | | | | |
| Communication | 201 (97) | 103 (96) | 98 (98) | 0.684 [c] |
| Information | 195 (94) | 102 (95) | 93 (93) | 0.474 [b] |
| Network | 141 (68) | 70 (65) | 71 (71) | 0.389 [b] |
| Posting pictures | 94 (45) | 38 (36) | 56 (56) | 0.003 [b] |
| Posting selfies | 44 (21) | 22 (21) | 22 (22) | 0.800 [b] |
| Entertainment | 188 (91) | 96 (90) | 92 (92) | 0.570 [b] |
| Business | 50 (24) | 25 (23) | 25 (25) | 0.784 [b] |
| For school | 3 (1) | 2 (2) | 1 (1) | 1.000 [c] |

[a] *Mann-Whitney U test was used;* [b] *Chi-square test was used;* [c] *Fisher's exact test was used*

**Table 2** The proportion of BDD: with vs. without mild AV (n=207)

| | All patients (n=207) n (%) | Mild AV | | P value |
|---|---|---|---|---|
| | | With (n=107) n (%) | Without (n=100) n (%) | |
| BDDQ-DV | | | | |
| With | 43 (21) | 33 (31) | 10 (10) | <0.0001 [a] |
| Without | 164 (79) | 74 (69) | 90 (90) | |
| DCQ | | | | |
| ≥11 | 29 (14) | 23 (22) | 6 (6) | 0.001[a] |
| <11 | 178 (86) | 84 (78) | 94 (94) | |
| DCQ | | | | |
| ≥14 | 11 (5) | 10 (9) | 1 (1) | 0.007 [a] |
| <14 | 196 (95) | 97 (91) | 99 (9) | |

[a] *Chi-square test was used;*

23 and 25 for the mild AV group and control group, respectively. The former group was significantly younger than the latter. Majority of the respondents were females (73%) for both groups. Most patients were in college level/graduate (39%) and postgraduate (36%). Educational attainment significantly differed between the two groups with a higher proportion of patients with mild AV in high school level/graduate and a higher proportion of patients in the control group in postgraduate level. More than 90% of patients reported using Facebook and Instagram. There was no significant difference between the groups in terms of social media platforms used except for Tiktok, which had a significantly higher proportion of patients with mild AV. The median duration of social media use among all patients was 6 hours per day ranging from 1-20 hours per day. For both groups, the top three reasons for social media use were communication (97%), information (94%) and entertainment (91%).

The most commonly used treatment in patients with mild AV were topical medications (79%) with only 1% using it without prescription. Majority of the patients with mild AV did not use systemic isotretinoin.

Among all patients, 21% presented with BDD symptoms, with a significantly higher proportion seen in patients with mild AV (31%) based on BDDQ-DV (Table 2). Using the DCQ with a cut-off score of 11, 14% were positive for BDD symptoms, which was significantly higher in patients with mild AV. With a higher DCQ cut-off of 14, only 5% were positive for BDD symptoms among all patients, which was still significantly higher in the mild AV group.

Table 3 summarizes concerns regarding specific body parts reported by 181 patients. Among those with mild AV, acne (31%) was the top concern followed by skin discoloration (25%), weight (18%) and perception of facial disproportion, particularly the nose and teeth (17%). Among the control group, top concerns included perception of facial disproportion (28%), weight (18%) and scars (16%).

Table 4 summarizes the effect of preoccupation with appearance as reported by 95 patients. Among those with mild AV, majority (47%) reported impairment in self-confidence and self-esteem, which was significantly higher than the control group. A significantly higher proportion of patients without mild AV noted a negative impact on relationship than those with mild AV.

Table 5 summarizes how these defects have significantly interfered with their social lives as reported by 47 patients. Most cited were isolation/hiding (23%) and becoming shy (21%). Only anxiety/worry significantly differed between the two groups, with a higher proportion seen in patients with mild AV.

Most patients had "acute selfie behavior" with no significant difference between the two groups (Table 6).

**Table 3** Specific body parts wherein patients are concerned about (n=181)

| Concerns, %yes | All patients (n=181) n (%) | Mild AV | | P value |
|---|---|---|---|---|
| | | With (n=99) n (%) | Without (n=82) n (%) | |
| Acne | 56 (31) | 56 (57) | 0 | <0.0001 [a] |
| Skin color/discoloration | 45 (25) | 37 (37) | 8 (10) | <0.0001 [b] |
| Weight | 30 (18) | 15 (15) | 15 (18) | 0.572 [b] |
| Perception of facial disproportion (nose, teeth, mouth) | 30 (17) | 7 (7) | 23 (28) | <0.0001 [b] |
| Perception of body disproportion (trunk, limbs, breast) | 17 (9) | 8 (8) | 9 (11) | 0.506 [b] |
| Health implications | 3 (2) | 2 (2) | 1 (1) | 1.000 [a] |
| Unwanted hair | 4 (2) | 3 (3) | 1 (1) | 0.628 [a] |
| Hair loss/receding hair line | 3 (2) | 2 (2) | 1 (1) | 1.000 [a] |
| Scars | 13 (7) | 0 | 13 (16) | <0.0001 [b] |
| Back acne | 5 (3) | 0 | 5 (6) | 0.018 [a] |

[a] *Fisher's exact test was used;* [b] *Chi-square test was used*

**Table 4** Effect of preoccupation with appearance in the patient's life (n=95)

| Effects, %yes | All patients (n=95) n (%) | Mild AV | | P value |
|---|---|---|---|---|
| | | With (n=73) n (%) | Without (n=22) n (%) | |
| Impaired social interactions | 10 (11) | 10 (14) | 0 | 0.110 [a] |
| Avoids posting on social media/shy to take photos | 4 (4) | 2 (3) | 2 (9) | 0.228 [a] |
| Impaired confidence and self-esteem | 36 (38) | 34 (47) | 2 (9) | 0.001 [b] |
| Health implications (not eating, trouble sleeping) | 2 (2) | 2 (3) | 0 | 1.000 [a] |
| Hides imperfections (masks, makeup, clothes) | 5 (5) | 5 (7) | 0 | 0.587 [a] |
| Anxiety/overthinking/insecurities | 20 (21) | 14 (19) | 6 (27) | 0.414 [b] |
| Unable to do usual hobbies | 1 (1) | 1 (1) | 0 | 1.000 [a] |
| Negative emotions towards others | 1 (1) | 0 | 1 (5) | 0.232 [a] |
| Avoidance/hide | 2 (2) | 0 | 2 (9) | 0.052 [a] |
| Negative impact on relationship | 3 (3) | 0 | 3 (14) | 0.011 [a] |
| Restraints on wearing particular clothes | 1 (1) | 0 | 1 (5) | 0.232 [a] |

[a] *Fisher's exact test was used;* [b] *Chi-square test was used*

## DISCUSSION

Among the different BDD screening tools, BDDQ-DV and DCQ are validated scales[24, 25] that have been used in dermatology settings – both in clinics and research. The former has a sensitivity and specificity of 100% and 93%, respectively, while the latter has 72% and 90.7%. As there are currently no studies on the Filipino population using either of the scales, this research utilized both.

The presence of BDD symptoms using the BDDQ-DV in this study was significantly higher in the mild AV group (31%) compared to the control group (10%). These results were higher when compared to findings by Bowe, et al.[9] who reported 14.1% of BDD in patients with mild AV using a more stringent score of 0 in the Allen and Smith acne severity scale; likewise, this increased to 21.1% with less stringent criteria of a score of 0-2 and not taking into consideration the presence of post-inflammatory

**Table 5** How defect significantly interfered with social life (n=47)

| Interference, % yes | All patients (n=47) n (%) | Mild AV | | P value |
|---|---|---|---|---|
| | | With (n=38) n (%) | Without (n=9) n (%) | |
| Lack of energy/motivation to socialize | 7 (15) | 7 (18) | 0 | 0.318 [a] |
| Embarrassment | 2 (4) | 2 (5) | 0 | 1.000 [a] |
| Isolation/hiding | 11 (23) | 11 (29) | 0 | 0.092 [a] |
| Bad remarks from others | 2 (4) | 2 (5) | 0 | 1.000 [a] |
| Became shy | 10 (21) | 7 (18) | 3 (33) | 0.377 [a] |
| Low self-esteem | 5 (11) | 5 (13) | 0 | 0.567 [a] |
| Missing/declined opportunities | 4 (9) | 3 (8) | 1 (11) | 1.000 [a] |
| Anxiety/worry | 3 (6) | 0 | 3 (33) | 0.005 [a] |

[a] *Fisher's exact test was used*

**Table 6** Selfie behavior: with vs. without mild AV (n=207)

| | All patients (n=207) n (%) | Mild AV | | P value |
|---|---|---|---|---|
| | | With (n=107) n (%) | Without (n=100) n (%) | |
| Selfie behavior | | | | |
| Borderline | 23 (11) | 15 (14) | 8 (8) | 0.388 [a] |
| Acute | 146 (71) | 73 (68) | 73 (73) | |
| Chronic | 38 (18) | 19 (18) | 19 (19) | |

[a] *Chi-square test was used*

macules and scars. The present study used a score of 0-2 similar to Bowe's less stringent criteria. Even so, a higher percentage of patients with BDD symptoms were reported in this study. Likewise, prevalence of BDD symptoms in the present study was also higher compared to findings by Marron, et al.[13] who reported a prevalence of 10.6% of BDD in patients with mild AV. Other reports diagnosed BDD using the Structured Clinical Interview for DSM-5 criteria (SCID) and recorded a prevalence of BDD in general dermatology patients of 14.4% in the USA, 6.7% in Brazil and 8.8% in Turkey, specifically in patients with mild AV for the latter.[9, 28] These variations may be a result of cultural and racial differences among countries, especially in terms of concerns regarding physical appearances.[9] In the Philippines, based on HERDIN plus advanced search, only one study has researched on BDD among Filipino patients. This study revealed a lower (4%) than expected occurrence of BDD in a cosmetic surgery setting, wherein Body Image Disturbance Questionnaire (BIDQ) was used followed by a clinical interview to diagnose BDD[29]. So far, no local study has explored BDD in the dermatology setting, particularly in patients with AV.

On the other hand, the DCQ revealed the presence of BDD symptoms that was also significantly higher in the mild AV group (22%) compared to the control group (6%) using a cut-off score of ≥11. Using a cut-off score of ≥14, the prevalence rate of 22% from the mild AV group dropped more than two-fold to 9%, which was still significantly higher than the control group. Different cut-off values were used by various studies, with a score of ≥14 having 72% and 90.7% sensitivity and specificity, respectively. [25] Comparable to the present study's results, Stangier, et al.[30] used DCQ among 156 female dermatological outpatients and yielded 21.1% to have significant dysmorphic concerns using a cut-off value of ≥11. This had a two-fold decrease upon increasing the cut-off value to ≥14, which was also observed in the present study. Likewise, Schut,

et al.(28) reported BDD symptoms in 10.5% of dermatology patients and only 2.1% in their control group using the DCQ with a cut-off score of ≥14.

Both scales used in this study were consistent in showing that BDD symptoms are commonly observed in patients with mild AV. Hence, even patients with negligible lesions of AV can have psychological distress severe enough to cause impairment, similar to patients diagnosed with BDD.[9] Patients in this study who had scores suggestive of BDD were counseled and referred accordingly.

It is important to keep in mind that BDDQ-DV and DCQ scales should not be used alone for the diagnosis of BDD, but rather as screening tools to identify patients that may be at risk of developing such and other comorbidities associated with BDD. A structured clinical interview done by trained psychologists or psychiatrists is warranted to confirm the diagnosis of BDD satisfying the diagnostic criteria presented in the DSM-5.

Another finding in this study is that majority of mild AV patients did not use systemic isotretinoin. In relation to the high rate of BDD symptoms in this study, this does not support previous findings that isotretinoin use was commonly sought upon by patients with BDD.[9] The low rate of isotretinoin users in this study may reflect a lower socioeconomic status among Filipino patients seen in the institution's free teledermatology consultation setting.

A component of the BDDQ-DV includes open-ended questions on patients' specific concerns of appearance that preoccupy them and how these affect and interfere with their lives. In this study, patients with mild AV were mainly concerned and preoccupied with acne followed by skin color and discoloration, and weight. This was consistent with previous reports[9] wherein acne was one of the most prevalent concerns of patients with BDD together with other skin concerns, hair and nose. This is an important consideration because upon improvement of acne lesions, patients with BDD may have their concerns shifted to another body part that may cause the same level of impairment.[9] The control group was mainly concerned about perception of facial disproportion on the nose, teeth and mouth, followed by weight and presence of scars.

These preoccupations led to impaired confidence and self-esteem which was significantly higher in patients with mild AV while it mainly led to anxiety and overthinking in the control group. In terms of interference in social lives, those with mild AV usually hide their perceived defects and isolate themselves while those without AV reported a tendency to become shy and anxious. These findings were consistent with previous studies which identified AV' negative implication on self-image, self-esteem, shame, embarrassment, self-consciousness, and feelings of being judged; consequently, leading to avoidance behaviors.[2] These concerns and preoccupations may appear minor, but in the context of BDD, such a manifestation can result in repetitive behavior and can cause significant impairment in a person's life functioning.[31] Other negative effects of appearance-related concerns include hiding and missing out on opportunities, which in more severe cases, patients are unable to leave their homes or engage with others to fulfill important social responsibilities.[31, 32] Interestingly, only a small portion of patients in this study reported avoidance of posting on social media as this was thought of as a means for patients with AV to compensate and alter their minimal physical defects.

The importance of screening for BDD has been highlighted by literature mainly because of its association with different comorbidities including higher rates of suicidal ideation (46%) and suicide attempt (18%) than the general population.[32] Surveys from the American Society for Dermatologic Surgery (ASDS) and American Society for Aesthetic Plastic Surgery (ASPS) found that 61% and 85% of dermatologists and surgeons, respectively, only recognized BDD post-procedure.[32] With familiarity of the typical presentation of BDD symptoms, earlier and appropriate referrals can be done. Likewise, it is important for physicians to understand that such patients will usually seek out reassurance from professionals, have poor insight into their disorder, and may respond negatively to psychiatric referrals, hindering treatment.[31, 32] In dermatology, when encountering patients with even little objective signs of skin disease, as in mild AV, a high degree of psychological distress can be explained by the presence of BDD.[28] Although depression, anxiety and overall psychiatric morbidity have improved upon successful treatment of AV, it was found that only 9.8% of dermatologic patients with BDD noted improvement after treatment and that subsequent treatments may increase symptomatology, demoralization and persistence of BDD.[2] This may likewise prevent economic costs associated with

unnecessary and even harmful treatment procedures constantly sought after by these patients.[30]

In terms of social media platform, the most commonly used among all patients were Facebook (95%), Instagram (90%), Youtube (72%), Twitter (61%) and Tiktok (52%), which was comparable to findings by local research done by Fernandez[33] with Facebook (98.67%), Instagram (81.78%), Youtube (64.89%), Twitter (52.89%) and Tiktok (33.78%) as the most commonly used platforms. In this study, there was no significant difference between groups in terms of social media platforms used except for TikTok, which can be due to its recent rise in popularity as the fastest growing social media platform in the world.[34] At the same time, since TikTok has been a huge source of acne-related posts [34] to which adolescents and young adults can have easy access, this can explain higher usage from the mild AV group compared to the control group.

A median of 6 hours of using social media was reported in this study, with no significant difference between groups. This is higher than the previous report of an average of 3 hours 53 minutes among Filipino users,[16] but this can be due to increased usage of the internet during the worldwide COVID-19 pandemic. Findings by Alsaidan, et al.[19] among a community of social media users suggested that BDD was significantly higher among those who spent longer duration on Snapchat and Instagram.

Using the SBS, most patients had "acute selfie behavior" with no significant difference between the two groups. A classification of "acute" indicated that they take selfies at least three times a day and post them online as compared to "borderline" who do the same but do not post them online; while "chronic" indicates uncontrollable urge and being compelled to post selfies more than six times a day.[15] Interestingly, no significant change existed between the mild AV and control group in terms of selfie behavior. It is important to note that having an "acute selfie behavior" does not denote a behavioral or compulsive behavior.[35] The concept of selfie behavior is still a novel concept with limited literature exploring its role in different psychological aspects.[15, 35]

In this study, most of the patients reported low self-esteem and impaired self-confidence, which were significantly higher in patients with mild AV. In previous reports,[36] it was mentioned that one of the motives for taking selfies was to increase self-esteem and seek self-reassurance. This was not reflected in the present study. Rather, Reyes, et al.[35] reported an association between narcissism and selfie behavior among Filipino adolescents and young adults wherein highly narcissistic individuals engage in greater selfie behavior.

## CONCLUSION

Using either the BDDQ-DV or DCQ, BDD symptoms were significantly more prevalent in patients with mild AV despite having lesions that are negligible and clinically not apparent. This highlights the importance of dermatologists' knowledge and awareness that BDD may cause distress and impairment and should be taken into consideration for management. Social media behavior, particularly in terms of selfie behavior, was consistent in both groups; in contrary to the previous assumption that patients with mild AV will either have higher selfie activity to compensate and alter their perceived physical defects or lower selfie activity to hide and isolate themselves.

### LIMITATIONS AND RECOMMENDATIONS

This study's limitations include its cross-sectional design which does not present causal nature of the relationship among AV, BDD symptoms, and social media use; hence further analytical studies are recommended. The screening tests used in this study can also be validated for the Filipino population and evaluated through a standard structured clinical interview in diagnosing BDD for more accurate prevalence rate of BDD among Filipino patients.

### DISCLOSURE AND CONFLICT OF INTEREST

This study is investigator-initiated and not industry funded or company sponsored. There is no potential conflict of interest.

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