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ORIGINAL RESEARCH

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A cross-sectional study of university students' pocket money variance and its relationship with digital health literacy and subjective well-being in Ghana

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Abstract

Background: Mental health concerns of university students are gaining more attention since the emergence of the coronavirus disease. Consequently, scholars in education, health and psychology-related fields have attributed the dwindling subjective well-being (SWB) of students to their low levels of digital health literacy (DHL). However, little attention has been paid to an important variable like pocket money (PM) which might serve as a buffer against reduced levels of SWB. In this study, we explored the dynamics of PM and its linkage with DHL and SWB among university students in Ghana.

Methods: With a cross-sectional design, a convenient sample of 1160 students was obtained from the University of Education, Winneba, Ghana. The COVID-DHL and WHO-5 Well-being instruments were used for the data collection for a 2 months period (February–March, 2021). Chi-square test, multivariate regression, simple linear regression, and PROCESS mediation analyses were performed with the use of SPSS software version 25.

Results: The study found that while most of the students were financially supported by their parents ($n = 715$, 61.6%), a larger proportion of them reported that their PM was either less sufficient or not sufficient ($n = 550$; 76.9%). Findings revealed a positive relationship between PM and SWB ($B = -36.419$, $p < 0.001$; $B = -13.146$, $p = 0.012$; $B = -10.930$, $p = 0.043$), with this relationship mediated by DHL ($B = -1.139$, confidence interval [CI] [−2.073, −0.263] vs. −2.300, CI [−4.290, −0.532] vs. −8.366, CI [−14.863, −1.908]).

Conclusions: Students with little to insufficient PM were vulnerable to mental health problems, although this could be buffered by the high DHL levels. In practical terms, not only should the PM of university students be increased, but

the sources of PM should be complemented since the sufficiency level of PM was associated with the source of finance. More importantly, parents should be empowered through job creation so that sufficient levels of PM can be provided to university students.

KEYWORDS
computer literacy, financial support, health literacy, low socioeconomic status, mental health

1 | INTRODUCTION

Students' subjective well-being (SWB) is gaining attention among positive psychologists, health scholars, educators, and researchers. SWB reflects an overall evaluation of the quality of a person's life from their perspective. SWB is a complex and multidimensional phenomenon which comprises both affective/emotional states (e.g., happiness, distress, dissatisfaction, sadness) and cognitive evaluations of individuals' life qualities such as life satisfaction.[1–3] Several studies in Australia,[4] Asia,[5,6] and Vietnam[7,8] found that 51%–65% of university young adults reported symptoms of depression and experienced low levels of SWB. It has been reported that students with low levels of SWB exhibit lower levels of academic achievement, class engagement, sense of community, social capital development and other behavioral outcomes.[9] Students' SWB are found to be related to several drivers such as family's economic situation, social context, objective and subjective socio-economic status and the money or allowances they received from their parents and significant others.[5,6]

Students' pocket money (PM) may influence their lifestyles and SWB. PM can be construed as an amount of money given to a student by his/her parents, typically on a regular basis (daily/weekly/monthly) for consumption and to be used for daily needs in school.[10,11] PM helps students to learn about the value of money, saving and investment, budgeting skills, consequences of misusing money and money management.[10,12,13] Researchers have found that university students received moderate to sufficient amounts of PM, depending on parents' social status, values, and belief systems.[5,6,14]

Previous studies have also established that students' PM (i.e., income) is strongly related to global evaluations of life satisfaction in the United States.[15,16] Likewise, Moneva and Tuñacao[10] in the Philippines, revealed that students' daily allowances positively affected their financial support satisfaction (i.e., an aspect of SWB). Other pieces of evidence have been found in China[5] and Turkey.[17,18] However, students in Nepal with insufficient PM were at higher risk of experiencing psychosocial dysfunction[19] and students from Turkey with little PM exhibited lower levels of SWB.[17] Additionally, Jebessa et al.[9] in Ethiopia ascertained that lack of PM or inadequate PM was associated with students' hunger, school dropout, truancy behaviors, late attendance to class, and poor attention span in class.

The relationship between students' PM and SWB could be explained by digital health literacy (DHL). DHL is viewed as skills related to searching, selecting, appraising, and applying online health information and healthcare-related digital applications to improve the psychological health or SWB of individuals.[8] Prior examinations have discovered that sufficient levels of DHL relate to better health and quality of health care; positive health behaviors, including prevention and management of chronic diseases; increased procedural health knowledge; and well-being.[20–23] Comparable discoveries reported similar findings among university students in Asia: South Korea,[6] China,[5] Vietnam,[8] and Pakistan.[24]

While DHL is essential for students' SWB, scholars have indicated that PM can predict students' DHL.[25] Drawing from the Fundamental Cause Theory (FCT), we propose that students' PM could facilitate students' development of DHL through digital platforms which in turn positively predict their SWB. FCT explains that social inequality in variables such as PM is positively linked to the disparity in SWB. This is not only due to the limitations placed on students with low PM but also because of the health benefits or satisfaction enjoyed by those with high PM.[26,27] The theory also emphasizes how resources such as PM affect access to opportunities to enhance individuals' DHL. Accordingly, students with high PM may have the opportunity to seek health information through various digital platforms and this can affect their SWB. Evidence shows that low functional health literacy among students could be attributed to low PM (i.e., socioeconomic status).[28] Chun et al.[6] in South Korea and Zhang et al.[29] in China found that university students with higher subjective social status and sufficient PM had significantly higher digital health literacy. However, student income has been found to negatively moderate the association between DHL and psychological well-being in China.[5] Students with sufficient PM can improve their SWB by avoiding poor health choices via using the money, knowledge, and social networks at their disposal compared to students with insufficient PM. From these findings, it is obvious that the relationship between PM and SWB is spurious as PM is linked to digital skills and knowledge as well as the application of these resources.

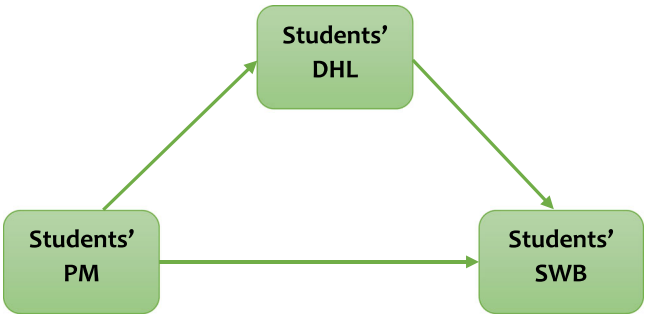

FIGURE 1 Conceptual framework on the mediating role of students' DHL in the relationship between PM and SWB. DHL, digital health literacy; PM, pocket money; SWB, subjective well-being.

University students in Ghana can be regarded as a vulnerable group as they face challenging circumstances and new experiences in their life course and this makes them susceptible to mental health problems[30–36] and this could affect their SWB. This could be worsened by the current economic hardship in the country. Yet, the dynamics of PM and the role of DHL in improving SWB are not well understood in the Ghanaian context. Moreover, due to disparity in culture (i.e., collectivism vs individualism), family values and belief systems toward PM and measurement of SWB, the findings from the western studies may not be applicable in the Ghanaian context. Studies have indicated that the conception of SWB in Ghana differs from other African nations, with large dissimilarities in the non–West African countries.[37–39] Given this backdrop, this study investigated university students' PM variance and its relationship with DHL and SWB in Ghana (depicted in Figure 1). The underlying assumption of the model, shown in Figure 1, indicates that the dynamics in students' PM predict their SWB through the levels of DHL. Consequently, the study (a) explored the reported status of PM among university students, (b) examined the relationship between PM and DHL of university students, (c) examined the relationship between PM and SWB and (d) assessed the mediation role of DHL in the relationship between PM and SWB.

2 | METHODS AND MATERIALS

2.1 | Study design and sample

The study was conducted as part of the global COVID-HL network (www.covid-hl.org). The descriptive cross-sectional survey design was adopted to conveniently select the sample for the study. The sample size for this study was determined using *a priori* statistical software G*Power version 3.1.9.2. From the *a priori* analysis, a sample of 360 was ideal to yield a minimum effect size of 0.02, at 5% error margin. However, the sample of 360 was quadrupled to 1440. However, some respondents refused to take part in the study, whereas others did not complete the survey, resulting in a sample of 1160 university students.

2.2 | Procedure

The study was conducted among undergraduate students at the University of Education, Winneba in Ghana who had agreed to partake in the study. First-year to fourth-year students were eligible to participate in the study. Distance and sandwich students were excluded from the study. Two research assistants were employed and trained to help collect the data. As part of the training, participants were systematically guided on how to administer the questionnaire to help them clearly understand and use the instrument without confusion. Following strict adherence to all COVID-19 safety protocols and ethical considerations, the survey instruments were given to the participants immediately before lectures to respond to the survey items within 20–25 minutes with the help of the research assistants. The data collection commenced from February to March 2021 (2 months). This was the period the schools had begun a new academic year after COVID-19 had subsided. Before that, participants were contacted for their availability and willingness to participate in the study. This was done in November and December 2020. The data collection took place at the university's main south and north campuses.

2.3 | Research instrument

A questionnaire was used for the data collection on the study variables, namely DHL and SWB. The instrument also entailed socio-demographic variables, including sex, age, and the number of semesters spent at the university. Following the demographic part, the participants' sources of funding for university education (e.g., support by parents, student grants, employment during the semester, employment during the semester break, and scholarships) was ascertained. In addition, another item also asked participants to indicate how sufficient they considered the PM at their disposal on a four-point scale ranging from "completely sufficient," "sufficient," "less sufficient," and "not sufficient." Before this, participants were asked to confirm whether they received PM or not.

The COVID-HL instrument developed by the COVID-HL network was used for data on DHL.[40] The DHL instrument which was initially designed by van der Vaart and Drossaert[23] (7 subscales, 21 items), and later adapted by Dadaczynski et al.[40] to fit the COVID-19 context (5 subscales, 15 items) was used to measure DHL. After several validations, the COVID-DHLI with 4 dimensions and 12 items has been found to have a high level of validity.[41,42] The dimensions entail information searching, adding self-generated content, judging the reliability of information searched and determining the relevance of the information searched. Each dimension comprised 4 items measured on a 4-point Likert scale ranging from 1 (very easy), 2 (easy), 3 (difficult), and 4 (very difficult). The possible obtainable scores for each dimension

range from 3 to 12, with high scores showing high DHL on the respective dimension. The reported reliability coefficients are as follows: 0.65 to 0.85,[43] 0.73 to 0.79,[22] 0.74 to 0.83,[42] and 0.77 to 0.86.[6] The reported reliability coefficients for this current study ranged from 0.74 to 0.87 using the McDonald Omega ω method.

The SWB of the students was also measured using the WHO-5 well-being index.[44,45] Participants were asked to indicate which statements apply to them the most over the past 2 weeks. Some of the statements include; "I have felt cheerful and in good spirit," "I have felt calm and relaxed" "I have felt active and vigorous" all on a scale that ranged from 0 ("all of the time"), 1 ("most of the time"), 2 ("more than half of the time"), 3 ("less than half of the time"), 4 ("some of the time"), and 5 ("at no time"). The minimum and maximum possible scores on the scale are 0 and 25, respectively, where lower scores depict better SWB. The WHO-5 developers require that total scores from the scale be multiplied by 4 to create a range of scores from 0 to 100. Previous studies have reported adequate internal reliabilities of 0.83 to 0.93,[46] 0.88,[47] and 0.86 to 0.88.[48] Additionally, this survey instrument is deemed valid with adequate utility features and acceptability within the Ghanaian context with reported reliability coefficients of 0.754 using the McDonald Omega ω method.[39] The Omega ω reliability coefficient of 0.814 was reported for this current research.

2.4 | Statistical analysis

Before the main analysis, the data were taken through a series of data management processes such as screening for data entry errors, checking for outliers and validating the responses. There were no missing data. A Chi-square test was performed to explore the association between PM and the source of university education funding. Multivariate and simple linear regression analyses were conducted to examine how PM status was related to the DHL and SWB of the students. Due to the demands of the multivariate regression, the univariate result was assessed using a stringent alpha of 0.0125 to determine whether a significant relationship was present or not. The regression analyses were carried out using categorical predictor PM status while creating dummies from the variable responses. A mediation analysis was conducted to assess the mediation role of DHL in the relationship between PM and the SWB of the students. With a bootstrap sample of 5000, model 4 was utilized for the mediation analysis using the PROCESS macro add-on for SPSS. For all the regression analyses, the demographic characteristics of the respondents were used as covariates (i.e., sex, age and number of semesters spent on campus as a student). SPSS software version 25 was utilized for the analyses.

2.5 | Ethical consideration

The University of Education, Winneba's Ethical Review Board formally approved this survey process which had a document number, DAA/P.1/Vol.1/39. An additional endorsement was sought from the Dean of students and Heads of Departments to allow their students to take part in the survey. Written informed consent forms were given to all participants to declare their intentions to be involved in the study. Before collecting the data, all participants were taken through the survey instrument to foster understanding and clarity. Furthermore, participants were duly informed that consenting to respond to the survey items was voluntary, meaning that they could withdraw or continue providing answers to the survey items at any time. Again, there was an assurance of keeping their data safe and anonymous and also using it only for research purposes.

3 | RESULTS

3.1 | Demographic information of participants

The study was dominated by male university students (female, $n = 325$; male, $n = 835$). The participants were aged between 18 and 42 years with a mean age of 23 years. Participants' number of semesters spent at university ranged from semester 1 to 8: 1 ($n = 65$, 5.6%), 2 ($n = 40$, 3.4%), 3 ($n = 793$, 68.5%), 4 ($n = 45$, 3.9%), 5 ($n = 130$, 11.2%), 6 ($n = 50$, 4.3%), 8 ($n = 35$, 3.0%).

3.2 | Reported status of PM among the university students

The study explored the status of PM among university students. No respondent indicated that they had not received any PM. The details of the results are shown in Table 1.

The findings, as presented in Table 1, revealed that close to half of the participants reported that their PM was less sufficient ($n = 575$, 49.6%). Quite a sizeable number of the students indicated that their PM was insufficient ($n = 365$, 31.5%). Whereas less than 20% of the sample stated that they had sufficient PM, about 1.7% intimated that they had completely sufficient PM ($n = 20$). A larger proportion of the respondents had their university education funded by their parents ($n = 715$, 61.6%). It was also revealed that the source of funding students' university education was significantly associated with the status of the PM, $\chi^2(12) = 144.329$, $p < 0.001$. Results showed that students funded by parents, student grants, and employment during the semester mostly reported less sufficient to not sufficient PM. Comparatively, some students who were funded via parents, scholarships, and employment during the semester break reported sufficient to completely sufficient PM levels.

3.3 | Relationship between PM and DHL of university students

The details of the relationship between PM and DHL of university students using multivariate regression analysis with a categorical predictor variable are shown in Table 2.

TABLE 1 Distribution of PM status of university students and financing agents of their education.

Who is financing your studies	Pocket money sufficiency				
	Not sufficient	Less sufficient	Sufficient	Completely sufficient	Total
Support by parents					
Count	210	340	165	0	715
% within Who is financing your studies	29.4%	47.6%	23.1%	0.0%	100.0%
% of Total	18.1%	29.3%	14.2%	0.0%	61.6%
Student grant					
Count	20	25	0	5	50
% within Who is financing your studies	40.0%	50.0%	0.0%	10.0%	100.0%
% of Total	1.7%	2.2%	0.0%	0.4%	4.3%
Employment during the semester					
Count	35	75	10	0	120
% within Who is financing your studies	29.2%	62.5%	8.3%	0.0%	100.0%
% of Total	3.0%	6.5%	0.9%	0.0%	10.3%
Employment during the semester break					
Count	90	75	10	10	185
% within Who is financing your studies	48.6%	40.5%	5.4%	5.4%	100.0%
% of Total	7.8%	6.5%	0.9%	0.9%	15.9%
Scholarship					
Count	10	60	15	5	90
% within Who is financing your studies	11.1%	66.7%	16.7%	5.6%	100.0%
% of Total	0.9%	5.2%	1.3%	0.4%	7.8%
Total					
Count	365	575	200	20	1160
% within Who is financing your studies	31.5%	49.6%	17.2%	1.7%	100.0%
% of Total	31.5%	49.6%	17.2%	1.7%	100.0%

Note: Chi-square test: $\chi^2(12) = 144.329$, $p < 0.001$.

The multivariate results showed that the status of PM is significantly related to the DHL of university students, $F_{(12,\ 3453)} = 41{,}808$, $p < 0.001$. The outcome of the univariate analysis revealed that university students who reported completely sufficient PM, as compared to those who reported either not sufficient PM ($B = -2.489$, $t = -14.385$, $p < 0.001$), less sufficient PM ($B = -2.162$, $t = -12.617$, $p < 0.001$) or sufficient PM ($B = -1.787$, $t = -10.156$, $p < 0.001$), were more likely to exhibit a high level of information searching skills. A similar pattern of results discovered with regard to the ability to add self-generated content with students who reported completely sufficient PM showed a higher ability compared to those who reported either not sufficient PM ($B = -2.400$, $t = -13.925$, $p < 0.001$), less sufficient PM ($B = -2.150$, $t = -12.596$, $p < 0.001$) or sufficient PM ($B = -1.948$, $t = -11.112$, $p < 0.001$). For the ability to determine relevance, those who reported that their PM was completely sufficient exhibited higher levels of this ability as compared to those with sufficient PM ($B = -0.522$, $t = -2.778$, $p = 0.006$). However, the status of PM was not significantly related to the DHL skill of evaluating the reliability of the information retrieved.

3.4 | Relationship between PM and the SWB of university students

The study also examined the relationship between PM and the SWB of university students through simple linear regression analysis. The predictor was PM whereas the SWB of the students served as the criterion. As the predictor was a categorical variable, dummies were created for the analysis.

As shown in Table 3, the PM status of students was significantly related to their SWB. Specifically, students with completely sufficient PM showed significantly higher levels of SWB than those with insufficient PM, $B = -37.659$, $t = -7.095$, $p < 0.001$ (see Table 3).

TABLE 2 Relationship between PM and DHL of university students.

Dependent variable	Parameter	*B*	Standard error	*t*	Sig.	95% Confidence interval	
						Lower bound	Upper bound
Information searching	Intercept	3.902	0.206	18.913	0.000	3.497	4.307
	Sex (female)	−0.125	0.050	−2.493	0.013	−0.223	−0.027
	Age	0.018	0.004	4.341	0.000	0.010	0.026
	No. of semesters	−0.045	0.016	−2.765	0.006	−0.078	−0.013
	Not sufficient PM	−2.489	0.173	−14.385	0.000	−2.828	−2.149
	Less sufficient PM	−2.162	0.171	−12.617	0.000	−2.498	−1.826
	Sufficient PM	−1.787	0.176	−10.156	0.000	−2.132	−1.442
	Completely sufficient PM (ref)	0[a]	–	–	–	–	–
Self-generated content	Intercept	3.820	0.206	18.585	0.000	3.416	4.223
	Sex (female)	−0.002	0.050	−0.047	0.963	−0.100	0.096
	Age	0.012	0.004	2.958	0.003	0.004	0.020
	No. of semesters	−0.035	0.016	−2.127	0.034	−0.067	−0.003
	Not sufficient PM	−2.400	0.172	−13.925	0.000	−2.738	−2.062
	Less sufficient PM	−2.150	0.171	−12.596	0.000	−2.485	−1.815
	Sufficient PM	−1.948	0.175	−11.112	0.000	−2.292	−1.604
	Completely sufficient PM (ref)	0[a]	–	–	–	–	–
Reliability	Intercept	1.702	0.212	8.014	0.000	1.285	2.119
	Sex (female)	0.037	0.052	0.720	0.472	−0.064	0.138
	Age	−0.003	0.004	−0.746	0.456	−0.011	0.005
	No. of semesters	0.024	0.017	1.396	0.163	−0.010	0.057
	Not sufficient PM	0.332	0.178	1.866	0.062	−0.017	0.682
	Less sufficient PM	0.334	0.176	1.894	0.058	−0.012	0.680
	Sufficient PM	0.365	0.181	2.015	0.044	0.010	0.720
	Completely sufficient PM (ref)	0[a]	–	–	–	–	–
Determining relevance	Intercept	1.414	0.220	6.414	0.000	0.981	1.846
	Sex (female)	−0.047	0.054	−0.877	0.381	−0.152	0.058
	Age	0.011	0.004	2.480	0.013	0.002	0.019
	No. of semesters	−0.007	0.018	−0.424	0.672	−0.042	0.027
	Not sufficient PM	0.434	0.185	2.349	0.019	0.072	0.797
	Less sufficient PM	0.159	0.183	0.867	0.386	−0.200	0.518
	Sufficient PM	−0.522	0.188	−2.778	0.006	−0.153	−0.891
	Completely sufficient PM (ref)	0[a]	–	–	–	–	–

Note: Multivariate output: $F_{(12,\ 3453)} = 41{,}808$, $p < 0.001$. *Significant at $p \leq 0.0125$.

[a]This parameter is set to zero because it is redundant.

Similarly, relatively low levels of well-being were observed for students with less sufficient PM as compared to those with completely sufficient PM, $B = -14.325$, $t = -2.727$, $p = 0.006$. Even when comparing those with sufficient PM versus those with completely sufficient PM, the level of well-being was significantly higher for the latter group, $B = -11.706$, $t = -2.167$, $p = 0.030$.

3.5 | Mediation role of DHL in the relationship between PM and well-being

A mediation analysis was performed to understand whether DHL could explain the relationship between PM and the well-being of university students. Table 4 presents the outcome of the analysis.

TABLE 3 Regression parameters for the statistical link between PM and wellbeing.

Parameter	*B*	Standard error	*t*	Sig.	95% Confidence interval	
					Lower bound	Upper bound
Intercept	75.709	6.372	11.882	0.000	63.207	88.211
Sex (female)	0.536	1.572	0.341	0.733	−2.549	3.621
Age	0.246	0.128	1.928	0.054	−0.004	0.497
No. of semesters	0.837	0.516	1.621	0.105	−0.176	1.850
Not sufficient PM	−37.659	5.308	−7.095	0.000	−48.073	−27.245
Less sufficient PM	−14.325	5.253	−2.727	0.006	−24.631	−4.019
Sufficient PM	−11.706	5.401	−2.167	0.030	−22.303	−1.110
Completely sufficient PM (ref)	0[a]	–	–	–	–	–

Note: *significant at $p < 0.05$.

[a]This parameter is set to zero because it is redundant.

TABLE 4 Relative total effects, direct effects, and indirect effects.

Indicators	Variables	*B*	BootSE	BootLLCI	BootULCI
Relative total effects of X on Y	X1	23.273	1.541	20.249	26.297
	X2	25.489	2.026	21.514	29.464
	X3	37.103	5.419	26.471	47.736
Relative direct effects of X on Y	X1	25.001	1.601	21.859	28.143
	X2	27.093	2.135	22.904	31.283
	X3	44.559	6.333	32.134	56.984
PM → Information searching → Well-being	X1	−1.139	0.466	−2.073	−0.263
	X2	−2.300	0.952	−4.290	−0.532
	X3	−8.366	3.282	−14.863	−1.908
PM → Self-generated content → Well-being	X1	0.269	0.384	−0.455	1.060
	X2	0.445	0.648	−0.738	1.836
	X3	2.510	3.511	−4.313	9.495
PM → Reliability → Wellbeing	X1	−0.001	0.062	−0.118	0.154
	X2	0.018	0.102	−0.145	0.284
	X3	−0.169	0.408	−0.999	0.666
PM → Determining relevance → Wellbeing	X1	−0.857	0.276	−1.425	−0.349
	X2	0.233	0.275	−0.202	0.872
	X3	−1.431	0.577	−2.720	−0.449

Note: X1: Less sufficient vs. other categories; X2: Sufficient vs. other categories; X3: Completely sufficient vs. other categories; not sufficient − reference group. X: Pocket money status; Y: Well-being.

The results showed a significant direct ($\Delta R^2 = 0.197$, $F_{(3,\ 1155)} = 94.250$, $p < 0.001$) and total effect ($\Delta R^2 = 0.192$, $F_{(3,\ 1155)} = 93.511$, $p < 0.001$) of PM on the well-being of university students. Generally, the results showed that DHL significantly mediated the relationship between PM and the well-being of university students (see Table 4). For instance, the results found that the ability to search for health information significantly mediated the link between PM and well-being ($B = -1.139$, confidence interval [CI] [−2.073, −0.263] vs. −2.300, CI [−4.290, −0.532] vs. −8.366, CI [−14.863, −1.908]). Further, it was discovered that the ability to determine the relevance of the health information retrieved significantly mediated the relationship between PM and well-being ($B = -0.857$, CI [−1.425, −0.349] vs. 1.431, CI [−2.720, −0.449]).

4 | DISCUSSION

We explored the links between PM, DHL and SWB among university students in Ghana. With a fourfold objective, the study specifically, ascertained the status of PM, the relationship between PM and DHL, the link between PM and SWB, and the mediating role of DHL between PM and SWB. It was revealed that more than three-quarters of the sampled students reported their PM as either less or not sufficient, a finding which contradicts previous studies.[5,6,14] This variation may be due to disparities in the studies' contexts. Previous studies were conducted in Asian countries while our current study was in Ghana, Africa. Comparatively, these are two different economies with Ghana being low economically. Therefore, acknowledging that PM is largely influenced by one's economic status, is not surprising. This precarious financial status of students may predispose them to poor SWB. In schools, students need PM for their personal upkeep and procurement of educational-related materials they may need to facilitate their sustenance on campus. Acquisition of these items ease them of the discomfort they are likely to experience in the absence of those materials. With students' indication of insufficient PM, they are likely to be vulnerable to psychological and emotional consequences characterized by persistent thinking of how to raise money, drift from academic work, and intentions to quit.[9] In the occurrence of the aforementioned, students' well-being is likely to be impacted negatively.

Regarding their source of finance, more than half of the respondents were financially supported by their parents, followed by those who received finance resources from employment during their semester breaks. Few respondents received student grants and scholarships, with parents taking greater responsibility for their children's schooling. It was further established that the source of students' finance was associated with their level of PM sufficiency. Thus, across all sources of financing for university education, the majority of the students reported less sufficient to not sufficient PM. However, relatively higher proportions of students reported sufficient to completely sufficient PM, specifically for each of the following sources of funding: parents, scholarships, and employment during the semester break.

PM sufficiency was associated with the source of finance. Usually, parents are the main financial supporting source. Hence, it may sound reasonable to suggest that support provided by parents may not be enough as PM for these students considering the numerous responsibilities of most parents in Ghana. Within the Ghanaian context, much premium is placed on having a large family size.[49] Parents equally have responsibilities for both nuclear and extended families, a situation which burdens most parents financially. Grounded in the collectivist culture, parents in Ghana are not only tied to the nuclear family responsibilities, but are also required to play roles related to other family relatives (e.g., paying school fees of nieces and nephews), and friends as well as loved ones (e.g., donating for wedding, funerals, and child-naming ceremonies). These roles affect parents in providing sufficient PM for their wards. However, reporting little to insufficient PM by students does not necessarily mean that their parents or guardian do not have sufficient money to support them. This phenomenon is common within the Ghanaian context where well-to-do parents avoid providing sufficient PM to their wards with the perception that this act would "spoil" their children. Although there is no known empirical evidence supporting this observation, this phenomenon is deeply rooted in the Ghanaian culture. Though our study did not establish the grants and scholarships as complementary to funding from parents, it is possible that some university students who are either on scholarships or working during semester breaks have parents or guardians financing some aspects of their livelihood. That notwithstanding, the call for further studies is important, particularly, on the measurement and determination of PM as well as its sufficiency levels. This suggested inquiry would provide a varied and broader perspective on PM use among students.

The relationship between PM and DHL revealed that the ability to search for information, add self-generated content, and determine the relevance of the information retrieved were significantly predicted by PM. It was found that the tendency for information searching and adding self-generated content decreased with decreasing levels of PM sufficiency. Thus, students with insufficient, less sufficient, and sufficient levels of PM relative to those who had completely sufficient PMs were less likely to search for information on the internet. The results imply that students with higher PM sufficiency do have a greater ability to search for and deal with digital health information. This result is consistent with several other studies.[6,25,29] In Ghana, internet access largely depends on one's ability to purchase an internet bundle. Among university students in Ghana, the use of Wi-Fi is limited, however, internet access is mostly through the procurement of internet from private telecommunication networks. In the wake of this, students are not likely to use their meagre PM to purchase an internet bundle which can give them access to the internet. Further analysis showed that those whose PMs were sufficient compared to those completely sufficient were less likely to determine the relevance of the information retrieved. Relating this result to the ability of information search and adding self-generated content, these results are coherent. That is, students who are less or not satisfied with their PM are less likely to have the ability in using the internet for information searching and self-generated content. Obviously, one would expect that the same persons should not be in any position to determine the relevance or ensure the reliability of their search, simply because they have not searched for any information nor generated any content.

On the relationship between PM and SWB, it was found that SWB declined across the reported levels of PM from sufficient PM to not sufficient PM. Students with completely sufficient PM had better SWB relative to those other levels of PM sufficiency. This finding is similar to reported studies[5,10,17] indicating that students with insufficient PM tend to exhibit psychosocial dysfunction and poor SWB. Additionally, this result can be explained within the framework of fundamental cause theory which posits that people with poor socio-economic status would have limited access to health, health-related information, and psychological services which lead to poor

health.[27] Consequently, poor socio-economic status can be likened to less sufficient or not sufficient PM leading to reduced SWB. This result underscores the link between insufficient PM and poor SWB. The linear relationship between PM and SWB was, however, mediated by DHL. Specifically, this mediation was for the information searching and determining relevance dimensions of DHL. The results suggest that students with high DHL (i.e., information searching and determining relevance) are more likely to have superior SWB across increasing levels of PM. This outcome points to the relevance of DHL in improving SWB. In the efforts to enhance the SWB of students, increasing students' PM would not be sufficient, given that DHL also plays a critical role. This results confirms earlier findings that sufficient or high levels of self-reported DHL relate to better health and more positive health behaviors in the prevention and management of chronic diseases.[6,8,20,22] Since this study appears to be among the first to mediate DHL between PM and SWB, further studies across heterogeneous population are required to broaden knowledge on the linkages established in the current study.

4.1 | Practical implications

The outcome of this study is insightful in continuous efforts toward improving the mental well-being of students in contemporary times. In practical terms, not only should the PM of university students be increased, but the sources of PM should be complemented since the sufficiency level of PM was associated with the source of finance. For example, parents' or guardians' support which is most fundamental should be complemented with scholarships, grants or bursaries. Additionally, interventions geared towards improvement in students' well-being should incorporate opportunities to enhance PM as well as improve DHL levels of students. More importantly, parents should be empowered through the creation of jobs so that sufficient levels of PM can be provided to university students.

The outcome of this examination provides useful information for comprehensive and tailored programs towards advancing university students' PM, health literacy, health, and well-being for achieving the sustainable development goal 3. Supporting the financial empowerment and satisfaction, health, and well-being of students should be of high priority among educators and parents. DHL should be highlighted as a mediating factor that enhances the positive effect of PM on SWB. Increasing PM and strengthening DHL among university students will enhance their critical thinking and evaluation of online resources, which could direct them to quality and trustworthy information sources on health.

4.2 | Strengths and limitations

This study adds a new dimension to the study of SWB by examining the extent to which PM relates to DHL and SWB. This connection could help in directing policy and interventions, specifically through the identification of possible areas of concern. A limitation of this study is the determination of PM sufficiency. Thus, the measurement of PM levels was not objectively determined, but rather in a subjective manner (i.e., reported by the university students). In reality, PM levels could be reported in an unstandardized method based on demographic variables such as family income, lifestyle, and spending habits. Additionally, the use of convenient sampling may pose a limitation on the representativeness of the sample used in this study. Another limitation of this research is that the causality of the variables cannot be assumed.

4.3 | Conclusion

Evidence from this study provides an empirical basis in suggesting that university students' PM predisposes them to poor mental well-being. This predicament could be worsened by students' reduced levels of DHL. Therefore, PM and DHL are jointly critical in determining the SWB of university students in Ghana.

AUTHOR CONTRIBUTIONS

Frank Quansah: conceptualization; data curation; formal analysis; investigation; methodology; software; validation; visualization; writing – original draft; writing – review & editing. **Francis Ankomah**: investigation; methodology; validation; visualization; writing – original draft; writing – review & editing. **Edmond Kwesi Agormedah**: investigation; methodology; validation; visualization; writing – original draft; writing – review & editing. **Simon Ntumi**: investigation; methodology; validation; visualization; writing—original draft; writing – review & editing. **John Elvis Hagan**: conceptualization; funding acquisition; investigation; methodology; project administration; resources; supervision; validation; visualization; writing – original draft; writing – review & editing. **Medina Srem-Sai**: conceptualization; investigation; methodology; resources; validation; visualization; writing – original draft; writing – review & editing. **Kevin Dadaczynski**: investigation; methodology; validation; visualization; writing – review & editing. orkan okan: investigation; methodology; validation; visualization; writing – review & editing. **Thomas Schack**: funding acquisition; investigation; resources; validation; visualization; writing – review & editing.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

Anonymized data is available upon reasonable request through the corresponding author.

TRANSPARENCY STATEMENT

The lead author John Elvis Hagan affirms that this manuscript is an honest, accurate, and transparent account of the study being

reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

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