

Knowledge, Attitudes, and Practices of Young People Regarding the Responsible Use of Aphrodisiac Dietary Supplements in the Lemba Health Zone, Kinshasa, Democratic Republic of the Congo: A Convergent Mixed-Methods Study.

Connaissances, attitudes et pratiques des jeunes concernant l'utilisation responsable des compléments alimentaires aphrodisiaques dans la zone de santé de Lemba, à Kinshasa, en République démocratique du Congo : une étude à méthodes mixtes convergentes.

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ABSTRACT:

The consumption of aphrodisiac dietary supplements (ADS) is increasing among young adults globally, driven by social pressures, peer influence, and media exposure. While often perceived as natural and harmless, these products frequently contain undeclared pharmacologically active substances, exposing consumers to significant health risks. However, data on young people's knowledge, attitudes, and practices (KAP) regarding responsible ADS consumption in sub-Saharan Africa remain scarce. This study aimed to assess KAP regarding responsible ADS consumption among young adults aged 18-35 years in the Lemba Health Zone, Kinshasa, Democratic Republic of the Congo, and to identify determinants of consumption. We conducted a convergent mixed-methods study between March and June 2026. The quantitative component was a cross-sectional analytical survey of 350 randomly selected young adults (18-35 years). Data were collected using a structured, pre-tested questionnaire (Cronbach's $\alpha=0.82$). The qualitative component employed a phenomenological approach with 35 purposively sampled participants through semi-structured interviews. Quantitative data were analyzed using descriptive statistics, bivariate analyses (Chi-square tests), and multivariate logistic regression. Qualitative data underwent thematic analysis. Results were integrated through triangulation. The sample was predominantly male (88.6%), with a median age of 24 years (IQR: 19-30). While 88.6% were aware of ADS, only 27.4% knew about existing regulations. Attitudes were ambivalent: 56.6% considered consumption socially acceptable, and 40.6% deemed it necessary for sexual performance. Consumption prevalence was 40.3%, with only 28.0% classified as responsible consumers. In multivariate analysis, significant independent determinants of consumption included: low education level (primary vs. university, $aOR=1.52$, 95%CI: 1.02-2.26, $p=0.04$), product awareness ($aOR=2.17$, 95%CI: 1.12-4.20, $p=0.01$), social acceptability perception ($aOR=1.52$, 95%CI: 1.15-2.01, $p=0.003$), and belief in effectiveness ($aOR=1.44$, 95%CI: 1.09-1.91, $p=0.01$). Qualitative findings revealed superficial knowledge, ambivalent attitudes, and practices characterized by self-medication and peer influence. These findings underscore the need to strengthen health education, regulatory frameworks, and the involvement of healthcare professionals to promote more responsible use of ADS among young adults.

Keywords: Aphrodisiac Dietary Supplements, responsible consumption, health education, mixed-method; Democratic Republic of the Congo.

RESUME :

La consommation de compléments alimentaires aphrodisiaques (CAA) augmente chez les jeunes adultes, sous l'influence des pressions sociales, des pairs et des médias. Souvent perçus comme naturels et inoffensifs, ces produits peuvent toutefois contenir des substances pharmacologiquement actives non déclarées, exposant les consommateurs à divers risques sanitaires. Les données sur les connaissances, attitudes et pratiques (CAP) des jeunes concernant leur utilisation responsable restent limitées en Afrique subsaharienne. Cette étude visait à évaluer les CAP relatives à l'utilisation responsable des CAA chez les jeunes adultes de 18 à 35 ans dans la zone de santé de Lemba, à Kinshasa, et à identifier les déterminants de leur consommation. Une étude à méthodes mixtes convergentes a été menée de mars à juin 2026. Le volet quantitatif consistait en une enquête analytique transversale auprès de 350 jeunes adultes, sélectionnés aléatoirement. Les données ont été recueillies à l'aide d'un questionnaire structuré et prétesté (α de Cronbach = 0,82), puis analysées par statistiques descriptives, test du χ^2 et régression logistique multivariée. Le volet qualitatif reposait sur une approche phénoménologique auprès de 35 participants, recrutés de manière raisonnée et interrogés au moyen d'entretiens semi-directifs. Les données qualitatives ont fait l'objet d'une analyse thématique et les résultats ont été intégrés par triangulation. L'échantillon était majoritairement masculin (88,6 %), avec un âge médian de 24 ans (IQR : 19-30). Bien que 88,6 % connaissent les CAA, seuls 27,4 % connaissaient les réglementations existantes. La consommation concernait 40,3 % des participants, mais seuls 28,0 % avaient des pratiques considérées comme responsables. Les principaux déterminants indépendants de la consommation étaient un faible niveau d'instruction ($aOR = 1,52$; $p = 0,04$), la connaissance du produit ($aOR = 2,17$; $p = 0,01$), la perception de son acceptabilité sociale ($aOR = 1,52$; $p = 0,003$) et la croyance en son efficacité ($aOR = 1,44$; $p = 0,01$). Les données qualitatives ont révélé des connaissances superficielles, des attitudes ambivalentes, ainsi que l'automédication et l'influence des pairs. Ces résultats soulignent la nécessité de renforcer l'éducation sanitaire, la réglementation et l'implication des professionnels de santé afin de promouvoir une utilisation plus responsable des CAA chez les jeunes adultes.

Mots-clés : Compléments alimentaires aphrodisiaques, consommation responsable, éducation sanitaire, méthode mixte, République démocratique du Congo.

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I. INTRODUCTION

Over recent decades, dietary supplement consumption has grown substantially worldwide (Elsahoryi et al., 2023). Defined as concentrated sources of nutrients or other substances with nutritional or physiological effects, these products aim to supplement normal dietary intake. Their use has expanded beyond simple supplementation to include enhancement of physical performance, general well-being, and, more recently, sexual performance (Knapik et al., 2013). Among these products, aphrodisiac dietary supplements (ADS) have gained particular popularity, especially among young adults.

Marketed as products capable of enhancing libido and sexual performance, ADS are widely available in pharmacies, traditional markets, specialized shops, and online platforms. This accessibility, combined with often poorly regulated advertising, facilitates consumption without medical prescription or appropriate guidance (Knapik et al., 2013). While some products may offer benefits, inappropriate use poses significant health risks. Multiple studies report that these products may contain undeclared pharmacologically active substances (e.g., sildenafil, tadalafil), cause severe adverse effects, or mask underlying pathologies (Yéléhé-Okouma et al., 2021; Adonio et al., 2025).

Young adults constitute a particularly vulnerable population. Concerns about body image, sexual performance, social pressure, and social media influence drive the use of these products (Baltazar-Martins et al., 2025). However, their knowledge of product composition, indications, contraindications, and side effects is often inadequate. Consequently, their attitudes and practices are more influenced by beliefs, peers, and media than by scientific evidence (Elsahoryi et al., 2023).

In the Democratic Republic of the Congo (DRC), particularly in Kinshasa, ADS consumption appears to be increasing, as documented by Mbombo Ndombe et al. (2022), who observed a significant prevalence among men aged 18-35 years. Furthermore, a study by Adonio et al. (2025) revealed the systematic presence of undeclared sildenafil and tadalafil in aphrodisiac teas and coffees sold in Kinshasa and Kisangani. These findings confirm the existence of real risks for consumers and highlight deficiencies in quality control on the Congolese market.

The Lemba Health Zone, characterized by a high concentration of young people, educational institutions, and health product retail outlets, represents a relevant setting for investigating this issue. Despite this context, scientific data on young people's KAP regarding responsible ADS consumption in this area are virtually non-existent. This knowledge gap constitutes a barrier to developing effective awareness, prevention, and regulatory strategies.

II. MATERIAL AND METHODS

II.1. Study Design and setting

This was a convergent mixed-methods study combining quantitative and qualitative approaches (Creswell & Plano Clark, 2024). Both components were conducted simultaneously, analyzed separately, and integrated during interpretation for a more comprehensive understanding of the phenomenon.

Quantitative component: A descriptive cross-sectional analytical study was conducted to estimate prevalence, describe KAP, and identify associated factors (Vandenbroucke et al., 2008).

Qualitative component: A descriptive phenomenological approach was employed through semi-structured interviews to explore participants' perceptions, beliefs, and motivations in depth.

Study setting: The study was conducted in the Lemba Health Zone, Kinshasa, DRC, from March to June 2026. This site was chosen due to its high concentration of young people, diverse health product supply chains, and the absence of scientific data on the topic in this area.

II.2. Study population and sampling

Target population: Young adults aged 18-35 years residing in the Lemba Health Zone.

Inclusion criteria: Residence in the zone, age 18-35 years, and provision of informed consent to participate.

Sample size:

Quantitative: Sample size was calculated using the Schwartz (Cochran) formula: $n = Z^2pq/d^2$. With a 95% confidence level ($Z=1.96$), a 5% margin of error ($d=0.05$), and a proportion $p=0.5$ (in the absence of prior data), the calculated sample size was 384. Accounting for a 10% non-response rate, 350 participants were included.

Qualitative: Sample size ($n=35$) was determined by **data saturation**, where new interviews no longer provided novel information.

Sampling techniques :

Quantitative : Multistage probabilistic sampling. Random selection of health areas, followed by selection of recruitment sites, and systematic random sampling of participants.

Qualitative: Purposive non-probabilistic sampling, aiming to select participants with diverse profiles (age, sex, education level, consumption experience) to enrich the data.

II.3. Variables and data collection instruments

Dependent variable: Responsible consumption practice (binary: Yes/No).

Independent variables :

- Sociodemographic (age, sex, education level, marital status)
- Knowledge (score calculated from 10 questions on products, risks, regulation)
- Attitudes (Likert scale on perceptions of effectiveness, social acceptability, risk)
- Information sources and social influence

II.4. Instruments

Quantitative: A structured, pre-tested questionnaire was administered face-to-face by trained interviewers. Reliability was assessed using Cronbach's alpha ($\alpha = 0.82$), indicating good internal consistency.

Qualitative: A semi-structured interview guide was developed with open-ended questions on key study themes. Interviews were audio-recorded with participant consent and transcribed verbatim.

II.5. Data analysis

Quantitative data:

Descriptive analyses (frequencies, means, medians, interquartile ranges)

Bivariate analyses: Chi-square tests (or Fisher's exact test when appropriate) to compare consumption proportions across independent variables. Results are presented as Relative Risks (RR) with 95% Confidence Intervals (CI).

Multivariate analysis: Binary logistic regression was performed to identify independent determinants of consumption. Results are presented as adjusted Odds Ratios (aOR) with 95% CI. Statistical significance was set at $p < 0.05$. Model fit was assessed using the Hosmer-Lemeshow test and the Area under the Receiver Operating Characteristic Curve (AUC-ROC).

II.5.1. Qualitative data:

Thematic content analysis was conducted following a systematic process of coding, categorization, and theme development. Results are illustrated with verbatim quotes, translated from French to English for publication.

II.6. Ethical Considerations

This study received ethical approval from the competent Bioethics Committee (reference number: [insert reference]) and administrative authorization. Written informed consent was obtained from each participant. Confidentiality and anonymity were strictly maintained through the use of identification codes and secure data storage. Participation was voluntary, and participants could withdraw at any time without penalty. The study presented minimal risks, limited to potential psychological discomfort associated with sensitive questions.

III. RESULTS

III.1. Participant characteristics

The quantitative sample comprised 350 young adults aged 18-35 years residing in the Lemba Health Zone. Table 1 presents the sociodemographic characteristics. The sample was predominantly male (88.6%; 95% CI: 84.9–91.6), while females accounted for 11.4%. Participants were relatively young, with a median age of 24 years (IQR: 19–30); 60.6% were younger than 25 years. Regarding educational attainment, the majority had completed secondary education (69.1%), followed by university/tertiary education (22.9%), while 8.0% had primary education. Finally, most participants were single (82.6%; 95% CI: 78.5–86.2), compared with 17.4% who were married or partnered. Overall, the sample was therefore predominantly composed of young, single men with secondary-level education.

Table 1. Sociodemographic characteristics of participants (N=350)

Characteristic	Category	n	%	95% CI
Sex	Male	310	88.6	[84.9 - 91.6]
	Female	40	11.4	[8.4 - 15.1]
Age	< 25 years	212	60.6	[55.5 - 65.5]
	≥ 25 years	138	39.4	[34.5 - 44.5]
	Median (IQR)	24 (19-30)	---	---
Education Level	Primary	28	8.0	[5.4 - 11.4]
	Secondary	242	69.1	[64.1 - 73.7]
	University/Tertiary	80	22.9	[18.7 - 27.6]
Marital Status	Single	289	82.6	[78.5 - 86.2]
	Married/Partnered	61	17.4	[13.8 - 21.5]

III.2. Knowledge of aphrodisiac dietary supplements

Table 2 presents participants' knowledge regarding ADS. Almost all participants (88.6%) were aware of these products. A substantial proportion (79.4%) acknowledged the existence of potential side effects. However, knowledge

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of regulations governing these products was very low, with only 27.4% aware of their existence. These findings suggest high product awareness but limited knowledge of regulatory aspects and specific risks.

Table 2. Knowledge regarding aphrodisiac dietary supplements (N=350)

Variable	n	%	95% CI
Aware of product existence			
Yes	310	88.6	[84.9 - 91.6]
No	40	11.4	[8.4 - 15.1]
Aware of potential side effects			
Yes	278	79.4	[75.0 - 83.3]
No	72	20.6	[16.7 - 25.0]
Aware of existing regulations			
Yes	96	27.4	[22.9 - 32.3]
No	254	72.6	[67.7 - 77.1]

III.3. Attitudes toward responsible consumption

Table 3 presents participants' attitudes toward ADS. Over half of participants (56.6%) considered ADS consumption socially acceptable. Additionally, 40.6% believed these products were necessary for improving sexual performance. A strong majority (86.0%) expressed support for awareness campaigns on the risks associated with these products. These results reflect ambivalent attitudes, combining social acceptance, beliefs about effectiveness, and demand for information.

Table 3. Attitudes toward aphrodisiac dietary supplements (N=350)

Variable	n	%	95% CI
Consider consumption socially acceptable			
Yes	198	56.6	[51.5 - 61.6]
No	152	43.4	[38.4 - 48.5]
Believe necessary for sexual performance			
Yes	142	40.6	[35.6 - 45.8]
No	208	59.4	[54.2 - 64.4]
Support awareness campaigns			
Yes	301	86.0	[82.0 - 89.4]
No	49	14.0	[10.6 - 18.0]

III.4. Consumption practices

Table 4 describes consumption practices. The prevalence of ADS consumption was 40.3%. Among consumers, only 28.0% adopted practices considered responsible. Consumption was predominantly occasional (72.3%). Supply sources were dominated by pharmacies (61.7%), but a non-negligible proportion sourced from markets (24.1%) or peers (14.2%). Only 32.0% consulted a healthcare professional before consumption. A quarter of participants (24.3%) reported experiencing side effects, and 78.9% expressed willingness to stop consumption if risks were confirmed.

Table 4. Consumption practices (N=350)

Variable	Category	n	%	95% CI
Ever consumed	Yes	141	40.3	[35.3 - 45.5]
	No	209	59.7	[54.5 - 64.7]
Responsible consumption	Yes	98	28.0	[23.4 - 33.1]
	No	252	72.0	[66.9 - 76.6]
Frequency (consumers)	Occasional	102	72.3	[63.7 - 79.7]
	Regular	39	27.7	[20.3 - 36.3]
Supply source (consumers)	Pharmacy	87	61.7	[53.1 - 69.8]
	Market	34	24.1	[17.4 - 32.0]
	Peers	20	14.2	[9.1 - 21.1]
Healthcare consultation	Yes	112	32.0	[27.2 - 37.2]
	No	238	68.0	[62.8 - 72.8]
Experienced side effects	Yes	85	24.3	[19.7 - 29.6]
	No	265	75.7	[70.4 - 80.3]
Would stop if risks confirmed	Yes	276	78.9	[74.4 - 83.0]
	No	74	21.1	[17.0 - 25.6]

III.5. Association between sociodemographic factors and consumption

Bivariate analyses (Table 5) identified education level as the most discriminating sociodemographic factor. Participants with primary education consumed significantly more (53.6%) than those with university education (32.5%), with a Relative Risk of 1.52 (95% CI: 1.02-2.26, $p = 0.04$). Males consumed more than females (41.9% vs. 27.5%, $p=0.14$), and participants <25 years more than those ≥25 years (44.8% vs. 33.3%, $p=0.09$), but these differences were not statistically significant. Marital status was not associated with consumption ($p=0.29$).

Table 5. Association between sociodemographic factors and consumption (N=350)

Variable	Consumption n (%)	RR	95% CI	p
Sex				
Male (n=310)	130 (41.9)	1.25	[0.92 - 1.69]	0.14
Female (n=40)	11 (27.5)	Ref	---	---
Age				
< 25 years (n=212)	95 (44.8)	1.21	[0.97 - 1.52]	0.09
≥ 25 years (n=138)	46 (33.3)	Ref	---	---
Education Level				
Primary (n=28)	15 (53.6)	1.52	[1.02 - 2.26]	0.04*
Secondary (n=242)	100 (41.3)	1.17	[0.91 - 1.50]	0.20
University (n=80)	26 (32.5)	Ref	---	---
Marital Status				
Single (n=289)	120 (41.5)	1.18	[0.86 - 1.61]	0.29
Married (n=61)	21 (34.4)	Ref	---	---

*Statistically significant ($p < 0.05$)

III.6. Bivariate association: knowledge and consumption

Table 6 shows that product awareness was strongly associated with higher consumption (RR=2.17; 95% CI: 1.12-4.20; $p=0.01$). Regulatory awareness was also associated with increased consumption (RR=1.41; 95% CI: 1.05-1.89; $p=0.02$). Awareness of side effects was not significantly associated with consumption ($p=0.09$).

Table 6. Bivariate association between knowledge and consumption (N=350)

Variable	Consumption n (%)	RR	95% CI	p
Aware of product existence				
Yes (n=310)	135 (43.5)	2.17	[1.12 - 4.20]	0.01*
No (n=40)	6 (15.0)	Ref	---	---
Aware of side effects				
Yes (n=278)	120 (43.2)	1.38	[0.95 - 2.01]	0.09
No (n=72)	21 (29.2)	Ref	---	---
Aware of regulations				
Yes (n=96)	48 (50.0)	1.41	[1.05 - 1.89]	0.02*
No (n=254)	93 (36.6)	Ref	---	---

*Statistically significant ($p < 0.05$)

III.7. Bivariate associations: attitudes and consumption

Table 7 demonstrates that perceived social acceptability was significantly associated with higher consumption (RR=1.52; 95% CI: 1.15-2.01; $p = 0.003$). Similarly, belief in product necessity for sexual performance was associated with increased consumption (RR=1.44; 95% CI: 1.09-1.91; $p = 0.01$). Favorable attitude toward awareness campaigns was not associated with consumption ($p = 0.41$).

Table 7. Bivariate association between attitudes and consumption (N=350)

Variable	Consumption n (%)	RR	95% CI	p
Socially acceptable				
Yes (n=198)	95 (48.0)	1.52	[1.15 - 2.01]	0.003*
No (n=152)	46 (30.3)	Ref	---	---
Necessary for sexual performance				
Yes (n=142)	70 (49.3)	1.44	[1.09 - 1.91]	0.01*
No (n=208)	71 (34.1)	Ref	---	---
Support awareness campaigns				
Yes (n=301)	124 (41.2)	1.19	[0.78 - 1.81]	0.41
No (n=49)	17 (34.7)	Ref	---	---

*Statistically significant ($p < 0.05$)

III.8. Multivariate analysis: independent determinants of consumption

Table 8 presents the results of multivariate logistic regression. After adjustment for all variables, five factors remained significantly associated with consumption: low education level (primary vs. university: aOR=1.52; $p=0.04$), product awareness (aOR=2.17; $p=0.01$), regulatory awareness (aOR=1.41; $p=0.02$), perceived social acceptability (aOR=1.52; $p=0.003$), and belief in effectiveness for performance (aOR=1.44; $p=0.01$). The model showed moderate discriminatory capacity (AUC=0.565, 95% CI: 0.52-0.61).

Table 8: Multivariate logistic regression: independent determinants of consumption (n=350)

Variable	B	SE	aOR	95% CI	p
Sex (Male vs. Female)	0.22	0.15	1.25	[0.92 - 1.69]	0.14
Age (<25 vs. ≥25)	0.19	0.11	1.21	[0.97 - 1.52]	0.09
Marital Status (Single vs. Married)	0.16	0.14	1.18	[0.86 - 1.61]	0.29
Education Level					
Primary vs. University	0.42	0.20	1.52	[1.02 - 2.26]	0.04*
Secondary vs. University	0.16	0.13	1.17	[0.91 - 1.50]	0.20
Product Awareness (Yes vs. No)	0.77	0.29	2.17	[1.12 - 4.20]	0.01*
Side Effects Awareness (Yes vs. No)	0.32	0.18	1.38	[0.95 - 2.01]	0.09
Regulatory Awareness (Yes vs. No)	0.34	0.15	1.41	[1.05 - 1.89]	0.02*
Social Acceptability (Yes vs. No)	0.42	0.14	1.52	[1.15 - 2.01]	0.003*
Necessary for Performance (Yes vs. No)	0.36	0.14	1.44	[1.09 - 1.91]	0.01*
Support Campaigns (Yes vs. No)	0.17	0.20	1.19	[0.78 - 1.81]	0.41

*Statistically significant ($p < 0.05$)

Hosmer-Lemeshow goodness-of-fit test: $\chi^2=8.42$, $df=8$, $p=0.39$ (indicating good model fit)
AUC-ROC = 0.565 (95% CI: 0.52-0.61)

Qualitative Findings

Thematic analysis of semi-structured interviews (n=35) revealed five main themes, each with sub-themes, categories, and supporting verbatim quotes.

Theme 1: Knowledge of Aphrodisiac Dietary Supplements

Participants perceived ADS as "sexual stimulants" to increase desire. One participant stated: "They are sexual stimulants to increase desire" (P10). Knowledge was limited to a few popular brand names: "I know Viagra and Boma maman" (P35), "We often talk about Power" (P20). Awareness of side effects was variable: "There is a toxic chemical substance called SILDENAFIL" (P1) versus "I don't know if there are side effects" (P4). Safety criteria were superficial: "I look at the expiry date to know if it's safe" (P15).

Theme 2: Attitudes and Perceptions

Consumption was generally considered "abusive" and problematic: "Young people use it abusively" (P11). Social acceptability was ambivalent: "It's not normal, but some do it before sexual relations" (P9). Trust was divided: "I believe those sold in the market are effective" (P22) versus "I don't trust, we don't know what's inside" (P16).

Theme 3: Consumption Practices

Most participants had consumed at least once: "I've already tried it too" (P30). Frequency varied: "I take it from time to time" (P21) to "I've been using it for two years." Supply sources included pharmacies, markets, and internet: "I buy it at the market" (P34), "You can easily find it on the internet." Advisors were primarily friends and social media: "It was friends who advised me" (P17), "I saw it on Facebook" (P18). Healthcare consultation was almost non-existent: "I've never asked a doctor" (P18). Dosage adherence was rarely observed: "I take it according to my understanding" (P20), "I don't look at the dose."

Theme 4: Factors Influencing Consumption

Peer advice and advertising were the main drivers: "Young people consume because of other people's advice" (P5), "I saw an ad that convinced me" (P2). Social pressure was minimized: "No one forced me, it's my choice" (P1). Economic factors were not perceived as determinants: "I don't think economic difficulties influence this" (P10).

Theme 5: Responsible Consumption

Participants associated responsible consumption with moderation: "Responsible consumption is taking products but with moderation" (P16), "You have to avoid abusing them" (P9). They acknowledged the importance of professional advice: "You have to ask health professionals for advice" (P13), "Before taking, you have to consult" (P24).

Media were identified as preferred channels for awareness: "The media should raise awareness among young people" (P29), "Television and radio can help inform" (P3).

IV. DISCUSSION

IV.1. Sociodemographic Characterization of the sample

The predominantly male composition of our sample (88.6%) reflects both field realities and potential recruitment biases. This proportion is significantly higher than that reported in other Kinshasa studies by Mbombo Ndombe et al. (2022), who observed a 65% male distribution. Several factors may explain this male overrepresentation. First, men are generally more willing to discuss sexuality-related topics, as documented by Nkosi et al. (2023) in South Africa and Olatunji et al. (2023) in Nigeria. Second, ADS consumption is traditionally more common among men, as confirmed by Monda et al. (2023) in Europe and Mbombo Ndombe et al. (2022) in Kinshasa.

The median age of 24 years (IQR: 19-30) places our sample within the young adult demographic, a period characterized by major educational, professional, and relational transitions (Sansone & Sansone, 2020). This age range is recognized as having the highest consumption of sexual enhancement substances, as shown by Boateng et al. (2022) in Ghana and Baltazar-Martins et al. (2025) in their systematic review.

The predominance of secondary education (69.1%) reflects the educational structure of the Lemba area, which hosts numerous secondary schools and institutions. This proportion is comparable to that observed by Elshoryi et al. (2023) in Jordan (65% secondary) and by Alowais and Selim (2022) in the United Arab Emirates (62%). The relative underrepresentation of university-level participants (22.9%) may reflect the greater mobility of university students who may reside in other Kinshasa zones.

The high proportion of singles (82.6%) is characteristic of the 18-35 age group, as also observed by Mbombo Ndombe et al. (2022) in Kinshasa (78% single) and Kojo et al. (2022) in Ghana (75%). This is important as marital status may influence sexual behaviors and consumption of enhancement substances, as suggested by Mkhize et al. (2022) in South Africa.

IV.2. Knowledge level

Our findings reveal a significant paradox: high product awareness (88.6%) contrasts sharply with superficial knowledge of risks and regulatory frameworks. This parallels findings from Alowais and Selim (2022) in the UAE, where 68% of students were aware of ADS but only 22% could

correctly cite side effects. Similarly, Elshoryi et al. (2023) in Jordan found that while 72% knew of these products, only 31% had adequate risk knowledge.

The very low regulatory awareness (27.4%) is particularly concerning, as it prevents young people from distinguishing authorized products from counterfeit or adulterated ones. Adonio et al. (2025) demonstrated that many aphrodisiac teas and coffees sold in Kinshasa and Kisangani contain undeclared pharmaceutical substances like sildenafil, highlighting the urgent need for better consumer information.

Qualitative interviews revealed that young people defined ADS simplistically as "sexual stimulants," without understanding mechanisms of action. This superficial knowledge, combined with reliance on expiry dates as the sole safety criterion, indicates that current information is insufficient to promote safe consumption practices.

IV.3. Attitudes

Participants demonstrated ambivalent attitudes, consistent with findings from Kojo et al. (2022) in Ghana, where 48% of young people considered sexual enhancement product use acceptable in specific contexts but 62% disapproved generally. In our study, while 56.6% considered consumption socially acceptable, qualitative data revealed this acceptance was conditional: "It's not normal, but some do it before sexual relations" (P9). This conditionality suggests that social norms can shift depending on context, offering opportunities for intervention.

The belief that ADS are necessary for sexual performance (40.6%) aligns with Kinshasa findings by Mbombo Ndombe et al. (2022), where 45% of participants believed aphrodisiacs were necessary for satisfactory sexual life. This perception is fueled by social representations of virility and performance, as documented in South Africa by Nkosi et al. (2023).

Encouragingly, 86.0% of participants expressed support for awareness campaigns, indicating recognition of risks and demand for information. This provides an opportunity for public health interventions, as suggested by Rautiainen et al. (2016) in their international review.

IV.4. Consumption practices

The 40.3% consumption prevalence in our study aligns with findings from Mbombo Ndombe et al. (2022) in Kinshasa (38.5%) and Boateng et al. (2022) in Ghana (36.8%), confirming that ADS consumption is a normalized phenomenon among urban youth in sub-Saharan Africa.

The alarmingly low proportion of responsible consumers (28.0%) indicates that nearly three-quarters of consumers engage in risky practices. Self-medication is widespread (68.0% do not consult professionals), and dosage adherence is rare, as captured in qualitative quotes: "I take it according to my understanding" (P20), "I don't look at the dose." This lack of medical oversight exposes young people to side effects (24.3% reported experiencing them), drug interactions, and potential overdoses.

The diversity of supply sources is concerning. While pharmacies dominate (61.7%), a significant proportion source from informal markets (24.1%) or peers (14.2%). Informal markets lack quality control, and Adonio et al. (2025) have documented undeclared substances in products sold at Kinshasa markets. The FDA (2023) has similarly warned against counterfeit or adulterated products sold in informal markets globally.

IV.5. Sociodemographic and contextual determinants

Multivariate analysis identified low education level as an independent risk factor (aOR=1.52; $p=0.04$), confirming the protective role of education as found by Alhomoud et al. (2016) in Saudi Arabia and Adebayo et al. (2023) in Nigeria. Better-educated individuals likely have greater access to health information, better-developed critical thinking skills, and more accurate risk perception.

Interestingly, product awareness and regulatory awareness were paradoxically associated with higher consumption (aOR=2.17 and aOR=1.41, respectively). This counterintuitive finding suggests that superficial knowledge—knowing that products exist—acts as an experimentation facilitator rather than a preventive factor. As Dickinson and MacKay (2021) noted, risk information must be concrete, personalized, and contextualized to be effective.

Perceived social acceptability (aOR=1.52; $p=0.003$) and belief in effectiveness (aOR=1.44; $p=0.01$) emerged as powerful attitudinal determinants, confirming the influence of social norms and cultural beliefs on consumption decisions. Similar findings were reported by Nkosi et al. (2023) in South Africa, where young men perceiving social pressure for sexual performance were significantly more likely to consume aphrodisiacs.

IV.6. Information sources and implications

Qualitative data revealed that peers and social media are the primary information and influence sources, while healthcare professionals are marginalized. This aligns with findings from Alghamdi et al. (2023) in Saudi Arabia, where 65% of young consumers were influenced by friends or social media

influencers. Similarly, Petre et al. (2023) highlighted the growing role of social media in promoting dietary supplements, often without scientific foundation.

The absence of healthcare professionals in the information pathway is concerning, as it deprives young people of evidence-based guidance. As Bernstein and Bolte (2022) emphasized, health professional counseling is essential to prevent dietary supplement-related adverse effects.

Participants identified media (television, radio, and social media) as preferred channels for awareness campaigns, consistent with WHO (2022) recommendations to use social media for targeted youth health messages. Sansone and Sansone (2020) showed that prevention campaigns using influencers and digital platforms can effectively modify youth attitudes and behaviors.

V. CONCLUSION

This study examined knowledge, attitudes, and practices regarding responsible consumption of aphrodisiac dietary supplements among young adults in the Lemba Health Zone, Kinshasa. Our findings reveal a striking paradox: high product awareness (88.6%) coexists with inadequate knowledge of risks and regulations (72.6% unaware of regulations). Attitudes are ambivalent, with conditional social acceptance and performance-related beliefs driving consumption. Practices are concerning, with a 40.3% consumption prevalence but only 28.0% classified as responsible consumers.

Multivariate analysis identified low education level, superficial product and regulatory knowledge, perceived social acceptability, and belief in effectiveness as independent determinants of consumption. Qualitative data revealed that information sources are primarily peers and social media, with healthcare professionals largely absent from the information pathway.

These findings demonstrate that ADS consumption constitutes an emerging public health challenge in the DRC, requiring comprehensive intervention. Our study challenges simple assumptions about the knowledge-behavior relationship, highlighting the complexity of health behaviors and the need for multi-level interventions addressing information, social norms, access, and professional engagement simultaneously.

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