Original Research

What drives the intention to dispense ETC medications without prescription across community pharmacists in Can Tho city, Viet Nam? – A theory-based cross-sectional analysis

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Abstract

Objectives: To access determinants of the intent of providing ETC medicines in non-prescription settings in community pharmacists in Can Tho, Vietnam in 2021. Additionally, we aimed to create a new measurement scale of degrees of effect for each factor. **Methods:** A cross-sectional research was conducted between June and October 2021. A self-administered questionnaire stemmed from the "Theory of Planned Behavior" (TPB), consisting of 24 statements on a 5-point Likert scale was mailed to targeted individuals. Exploratory factor analysis is the major instrument apart from the t-Test and ANOVA statistics. 120 pharmacy personnel working at 120 randomly chosen drugstores in Can Tho. **Results:** Subjective norms have been found to be the most influential factor, followed by perceived behavior controls, and positive attitudes toward the action of concern. TPB-based model is responsible for approximately 40% of the variance in the willingness to take action. **Conclusion:** It seems that community pharmacists' decision toward prescription pharmaceuticals has not been academically attractive. Extra papers are necessary to understand the motives behind the execution of the behavior.

Keywords: community pharmacists; dispensing practices; factor analysis; Theory of Planned Behavior; Vietnam

INTRODUCTION

In 2020, ethical medicines made up a majority of Vietnam's pharmaceutical industry (73%), dominating the number 27% of over-the-counter products in total market value. As elsewhere, pharmacies are frequently Vietnamese patients' initial point of entry to the healthcare system, as well as their preferred channel for acquiring medicines.[1] Although ETC medicines are officially prescribed-only ones, previous research revealed an unprecedentedly high rate of illegal dispenses (ranging from 80 to 100% for antibiotics).[2] One of the most urgent public health concerns is the widespread irrational use and gross abuse of antibiotics pose a significant threat to antimicrobial resistance (AMR). Moreover, the quality of pharmacy consulting services, in general, is far lower than expectations and varies between rural and urban areas. Such highlights the fact that community

pharmacists are failing to practice their profession with the long-term goal of strengthening and enhancing social health. Indeed, task performances of dispensers in these contexts appear to predominantly be characterized by deficit knowledge and inappropriate instructions.[3,4] The "Circular. 12/20/TT-BYT", which was published by the Vietnamese Ministry of Health in June 2020, and the "Circular. 02/18/TT-BYT" has complemented in standardization of Good Pharmacy Practice (GPP).[5] Argued that some explanations for this are the removal of formerly prescription-only medications from the list of over-the-counter drugs (OTC switch) in addition to the preference of individuals to assume greater responsibility for their own well-being. Also, there are multiple factors being ascribed, including improper prescription and inadequate health education, limited budget and qualified workforce, unauthorized ethical product sales, regulatory system deficiencies, etc.[6,7]

Accordingly, the primary purpose of this study is: [1] to evaluate which specific constructs affect pharmacy retailers in Vietnam when dealing with invalid ETC medication purchases from customers in 2021, and [2] to develop an innovative tool to measure the magnitude of the dimensionality.

METHODS

Study design and settings

The research was a descriptive cross-sectional survey conducted in 6 districts (4 urban and 2 rural) in Can Tho, the central city in the heart of Mekong Delta River area with a total population of over 1.25 million (in 2021). The process of collecting data is undertaken within 4 months, from October 1st to February 20th, 2021.

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A self-administered questionnaire (SAQ) document was created online, then sent to CPs'contact emails. Prior to delivering the official questionnaire, the authors did a pilot study within 20 randomly chosen drugstores and organized a discussion between clinical pharmacists of the Can Tho University of Medicine and Pharmacy Hospital to standardize the survey. During the sample collection, we removed any responses from CPs that did not fulfill our criteria along with any incomplete ones; only answers satisfying our entire requirements were registered. The rationale for adopting the online survey technique is that it prevents face-to-face interactions amid social distancing in the raging wave of the COVID-19 pandemic.[8]

The entire SAQ comprises 24 items dealing with 4 domains of personal routine interventions. Questions within the interview were developed on the "Theory of Planned Behavior" (TPB), which was first elaborated by Ajzen, 1985, 1991. TPB exerts a huge impact on human psychology and inspires accomplished scholars to publish advanced extensions.[11] In brief, this theory helps predict with high accuracy what determinants of aforementioned behavior are. Ajzen perceived that there are 3 factors that account for the variance in performing the behavior (Figure 1):

The theory proposes that an individual's behavioral intentions are driven by three fundamental variables, namely, attitude toward behavior, subjective norm, and perceived behavioral control (PCB).[9] In other words, people tend to engage in activities that they view as beneficial; are well-appreciated by those they consider important in society; and, when they feel capable of performing the action, with little resistance. One of the most intriguing ideas is PCB attributes to both intentions and behavior execution. These are different from the "Knowledge-Attitudes-Practices (KAP)" model, which also is a well-established theory. KAP model, in medical contexts, is applied to enhance knowledge, attitudes, and practices on a certain topic and/or clarify misconceptions or misunderstandings about health-related subjects, to name a few. According to KAP, the only thing stopping us from acting in a decent and morally responsible way is a lack of knowledge. Whilst useful in some settings, this approach has limitations due to the fact that not all human actions are governed by knowledge levels.

On a 5-point Likert scale, responses to the knowledge and attitude inquiries were scored as specified:

1 = "strongly disagreed"; 2 = "disagreed"; 3 = "neutral"; 4 = "agreed"; and 5 = "strongly agreed".

The survey consists of 4 main sections: Attitude (A) (7 items), Subjective norm (SN) (6 items), Perceived behavioral control (PBC) (5 items), and Intention to perform a given behavior (6 items) (Supplement Materials).

The OR index was used to calculate the correlation between general pharmacy employees' perceptions and information variables involving CPs, with a confidence interval, CI of 95%.

The total number of community pharmacies (CPs) (630) in Can Tho city was provided by the Can Tho Department of Health. According to the formula below (Eq.1),[12] the minimum required sample size for this analysis is n = 94. Nonetheless, in order to maximize the generalizability of the results, eventually, the investigators decided to take a sample of 120 subjects. With n = number of nessecery required sample size: $n = Z^2_{(1-\alpha/2)}$ (Eq.1)

$$\frac{p(1-p)}{d^2}$$

d = a margin of error (d = 0.05);

p = the estimated percentage of CPs giving counseling to clients (p = 0.412,[13] a previously published article in Vietnam was taken into account prior to choosing this p-value);

a confidence interval CI of 95% (corresponding to a Z-score of 1.96).

Data analysis and quality assurance

The Kolmogorov-Smirnov statistic (K-S test) is selected for its utility as a critical instrument to compare and contrast how well the distribution of sample data resembles the theoretical distribution.[14]

Cronbach's alpha (also known as coefficient alpha, is used to examine the scale's reliability.

Articulated by Lee Cronbach in 1951, the value of ranges from 0 to 1.[15] High Cronbach's alpha is typically indicative of a high degree of internal consistency unless the length of the
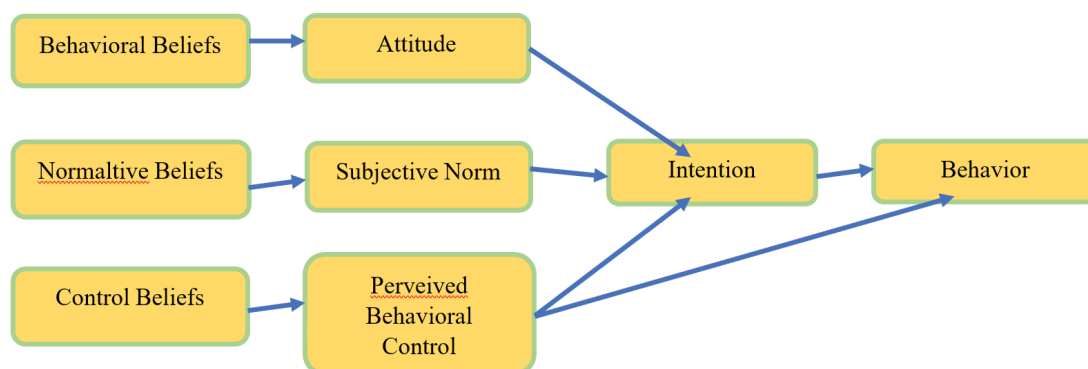

Figure 1. Illustrated Diagram of "Theory of Planned Behavior" (Ajzen, 1991)

investigation is too short.[16] Reportedly, the acceptable value of is in the proximity of 0.70 and 0.95. A value higher than 0.3 demonstrates appropriate reliability.

Exploratory Factor Analysis (EFA): Conceptually, EFA is a fundamental tool in multivariate statistics to uncover and extract potential underlying contributors using a principal components analysis and varimax rotation method.[17]

The authors undertook EFA to ensure the dimensionality decrease of the variables concerning willingness to supply ETC pharmaceuticals illegitimately. To determine the initial number of components to be rotated, eigenvalues larger than 1 were considered salient, while a threshold value of 0.5 is also established as the inclusion criterion for factor loadings (FL). Given a relatively small sample, in reality, researchers no longer tend to choose the cut-off FL of 0.3.[18]

The independent sample *t*-Test enables us to compare the means between 2 reflective indicators (with significance at $p < 0.05$) whilst the one-way analysis of variance (ANOVA) examines qualitative variables with 3 or more values to see if there was a significant statistical difference. Statistical Package for Social Sciences (SPSS) version 20.0 and Microsoft Excel 2013 were utilized to interpret data. The sampling adequacy metric introduced by Kaiser-Meyer-Olkin [19] KMO (0.5 is a cut-off point for equivalence), and Bartlett's Test of Sphericity[20] help to check the sampling appropriateness of input data. Additionally, the screen test was undergone in accordance with instructions by Cattell, 2010 in order to identify the optimal number of underlying measured variables.

During the data-gathering progress, our team verified them for validity, then cleaned them by cross-checking. Subsequently, the outcomes were summarized in descriptive statistic tables.

Inclusion and exclusion criteria

Drug outlets, which are not GPP-certified, and hospital pharmacies, are both excluded from the investigation. Those belonging to pharmaceutical entrepreneurs and public medical institutions are not our focus either.

Ethical considerations

Our research was done following the guidelines presented in the Declaration of Helsinki.[22] The study was approved by the Medical Ethics Council of the present institution (299/HDDD-PCT). A cover letter, which approval number concisely introduces the purpose and ethics of the survey to recipients, is also placed at the beginning alongside the SAQ. All participants provided written informed consent before enrollment in the study.

RESULTS

The overall quantity of SAQ delivered is 184 (response rate = 65.2%).

Respondent characteristics

Table 1 outlines an apparent gender disparity working at CPs, where females (77 respondents, 63.3%) dominate their male counterparts (44 respondents, 36.7%). Around two-thirds of respondents (77 people, 64.2%) have at least a bachelor's degree in pharmacy while nearly one-third of them (43 people, 35.8%) report the highest educational level is secondary graduates. Also, there is no remarkable quantity gap between age groups participating in the questionnaire. 50 out of 120 respondents (41.7%) were aged from 31 to 59, which is 11.7% higher than the second common age category (from 60 and above). Experience in pharmacy practice seems to share

Table 1. Sociodemographic characteristics of pharmacy dispensers		Number	Rate (%)	Mean score	SD
Features		**Number**	**Rate (%)**	**Mean score**	**SD**
Gender	Male	44	36.7	2.15	0.69
	Female	76	63.3	2.20	0.62
Age groups (years)	30	34	28.3	2.14	0.59
	31 – 59	50	41.7	2.11	0.66
	60	36	30.0	2.31	0.67
Academic education/ Professional license(s)	Bpharm or higher	77	64.2	2.15	0.69
	Secondary graduates or below	43	35.8	2.23	0.56
Working as a drug seller for how long? (years)	≤ 4	41	34.2	2.12	0.53
	5 - 8	37	30.8	2.20	0.71
	≥ 9	42	35.0	2.22	0.69
Working in CPs for how long? (years)	3	44	36.7	2.27	0.52
	4 - 6	38	31.7	1.99	0.72
	> 6	38	31.7	2.26	0.67
Location	Major district	94	78.3	2.14	0.65
	Outer district	26	21.7	2.32	0.63
Total		**N = 120**	**100**	**2.18**	**0.64**

the same pattern with the age group. The surveyed general workers who have been working in the profession for no more than 4 years, between 5 and 8 years, and 9 years or over are 41 (34.2%), 37 (30.8%), and 42 (35.0%), respectively. Plus, a vast majority of the CPs (78.3%) are located in urban districts, which clarifies a congesting density of pharmacies/drugstores on a wide variety of scales in such heavily inhabited areas. Still, no statistical connection was observed in terms of all the above-mentioned demographic traits with the magnitude of intentions at the CI of 95%.

Explanatory variables

The estimated KMO coefficient is 0.778 and Bartlett's Test of Sphericity is significant (p < 0.001), revealing the factorability of the correlation matrix. It is therefore confirmed that the correlation is suitable for factor analysis.

Broadly speaking, PBC has the highest CA coefficient (0.807) in comparison with SN (0.783) and Attitudes (0.722), depicting a fairly good level of reliability. That is evident opposite to Attitudes items, whose item-total correlation values do not exceed 0.55. The 2 items SN1 and PBC1 are excluded because their current CAs are lower than the scale if the items are removed. Furthermore, with the CA value of 0.706, PBC5 has the greatest total variable correlation coefficient out of 18 items.

Outcome variable

The KMO coefficient is 0.847 and Bartlett's test gives a significant result to the former analysis (*p* < 0.001). Again, the whole data is relevant for factor analysis.

Ultimately, there are 2 variables in the original scales that are discarded due to low internal consistency. The remainders are divided into 2 categories, namely, independent variables 16 items of attitudes, SN, and PBC), dependent variables making up of 6 items of Intentions.[17] As explained earlier, such independent variables must all satisfy 2 criteria (item-total correlation coefficient is not less than 0.3 and scale if item deleted is lower than available CA). They proceed with the exploratory factor analysis (EFA).

4 extracted components should be retained for rotation, as outlined in the scree test. The extractions thus imply that a four-factor solution is assumed the most satisfactory, given the inflection point occurs in the fifth and the second component and its 4 and 1 previous ones' eigenvalues are greater than 1 (Figure 2A and Figure 2B), respectively. As outlined in Table 2, 3 former factors have been split into 4 components and coded in advance. 7 items belonging to the "Attitudes" component are decomposed, and now become 2 separate ones: A (+), representative of positive attitudes, and A (-), symbolizing negative attitudes. Simultaneously, the 2 latter constructs are still unchanged; to this end, we do not modify their codes.

Items of A (+) have FL values ranging in the vicinity of 0.682 to 0.822, which are all greater than the threshold of 0.5. Interestingly, those of A (-) show high values (their FL are greater than 0.82, with the highest number recorded in the A5). With regards to the SN component, SN2, SN3, SN4, SN5, and SN6 calculated figures are 0.685, 0.565, 0.632, 0.813, and 0.738. All but PBC2 (FL = 0.570) loads sufficiently on its PBC factor. To sum up, each factor is saliently loaded by 5 to 7 items, unless SN3 and PBC2 vaguely correlate. (Table 3)

The items all load on a single factor, hence renaming is unnecessary. Items within this factor present a high degree of association, suggested by the FL values larger than 0.72. Notably, I1 exhibits the largest FL coefficient (0.876) compared to the other 5 items.

3 components (positive attitudes, SN, and PBC) show a favorable connection with the Intention to carry out the behavior. On the other hand, figures for A (-) (p = 0.072 > 0.05) infer negative attitudes' impacts are not statistically significant. To be specific, SN exerts the most influence (R^2 = 0.307), followed by PBC (R^2 = 0.214) and A (+) (R^2 = 0.148), while A (-) yields the least impact (R^2 = 0.027).

The model accounts for 39.7% of the variance in the intent to sell prescription medications when prescriptions are not available, which is of course not impressive but rather acceptable compared to TPB behavioral research findings (23,24). In which, the SN is the most influential factor with the unnormalized coefficient of 0.382 whereas that of A (-) is

* Nhân tố = Component
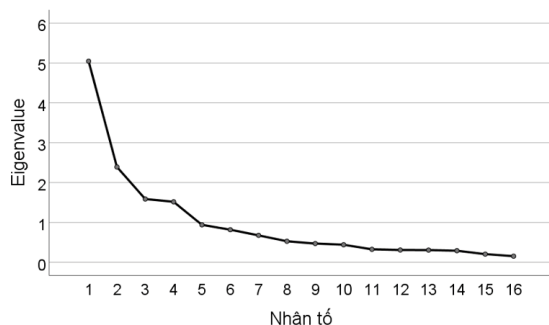
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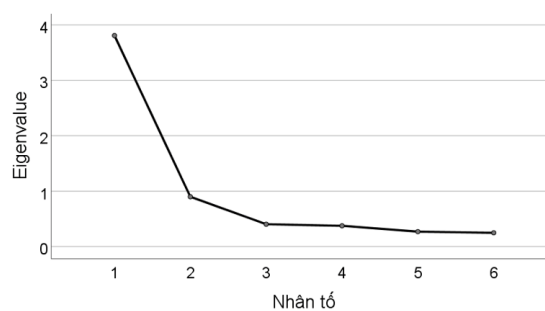
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Figure 2. Screen plot graph of explanatory variables (A) and outcome variables (B) to find optimal factor solution

Table 2. Factor loading of items in measurement scales with dependent and independent variables of the final data set				
Items	**Factor loading**			
	1	**2**	**3**	**4**
A1. I think that DEwP helps increase the sales turnover significantly.		0.573		
A2. Antibiotics should be supplied without a prescription if I know that patient could not have enough time and afford to see the physician.		0.682		
A3. I perceive that ETC products can improve the symptoms better than OTC ones.		0.822		
A4. DEwP, in my opinion, is helpful to retain current clients of the pharmacies and gain new ones.		0.802		
A5. DEwP, as far as I acknowledge, is among irrationalities in taking medications.				0.902
A6. Providing prescription drugs over the counter means violating legal regulations.				0.926
A7. I think that DEwP would pose a risk of damaging the patients' well-being.				0.865
SN2. I discern that most CPs practice DEwP on a regular basis.	0.685			
SN3. In broad terms. the pharmacy owners do not prohibit their employees from DEwP.	0.565			
SN4. I frequently DEwP either in response to demands or pressure from consumers.	0.632			
SN5. Sales pressure imposed by pharmacy owners will promote the behavior of DEwP.	0.813			
SN6. Personal monthly income constraints drive me to DEwP.	0.738			
PBC2. I believe that I have good knowledge to consult properly and sufficient experience in dispensing ETC medicines when necessary.			0.570	
PBC3. I reckon that I have sufficient experience in monitoring the safety and efficacy of DEwP.			0.795	
PBC4. Numerous doctors prescribe and sell medications to patients arbitrarily, some clients thus are not offered a prescription prior to visiting CPs.			0.794	
PBC5. Usually, when getting common symptoms, people do not see a doctor. Instead, they self-medicate, consequently, they do not have a valid prescription.			0.784	
I1. I would offer ETC medicines with no need for prescriptions in case the client is my acquaintance.	0.876			
I2. I think ETC medicines should be obtained without prescription if the patients failed to see the doctor.	0.727			
I3. I would dispense ETC products without prescription if the customer has been working in the medical sector.	0.780			
I4. I would provide prescription medications over the counter at times when I suppose that there is no medical inspection.	0.775			
I5. I would supply ETC medicines without prescription regardless of the presence of cameras and surveillance of my activities.	0.820			
I6. I would continue to sell prescription drugs over the counter even if the penalty rises.	0.795			
DEwP: Dispensing ETC medications without prescriptions				

Table 3. The magnitude of the effect of a single factor on the intent to engage in the behavior of selling ETC medications without a prescription					
Components	**B**	**s**	**R**	**R²**	**p**
A (+)	0.306	0.385	0.385	0.148	0.000
A (-)	-0.137	-0.165	0.165	0.027	0.072
SN	0.543	0.554	0.554	0.307	0.000
PBC	0.384	0.463	0.463	0.214	0.000

-0.149, proving it the dimension with the weakest impact. The figures for A (+) and PBC are 0.109 and 0.175, respectively.

Tables for specific presentation results of the survey are provided in Supplemental Material.

DISCUSSION

The decision to supply ethical medicines over the counter of drug retailers who respond to the questionnaire is most likely affected by beliefs about what most people do (descriptive norms), perceptions on what people should or should not do (injunctive norms), and what popular figures in the community do (cohesive norms).[25] Next, available resources (either internal or external) and opportunities/difficulties have been predicted to be positively correlated to whether they intensify or hinder willingness. To illustrate, they would take the action in circumstances: (1) grappling with sales pressure and competition among local pharmacies, (2) strains to warrant personal financials, (3) strong confidence in clinical expertise and professional ability, and (4) repeatedly encountering similar practices, etc.

Current research on determinants of sales of prescription medicines may not acquire substantial attention from scholars, as seen by the superficiality and scarcity of published works regarding this certain issue. Alternatively, a plethora of in-depth articles looks at excessive antibiotic provision drivers, which somewhat have similarities to the topic of over-the-counter supplying of ETC pharmaceuticals. Barker et al. 2017

discovered that pharmacy dispensers most depend on the level of procuring pressure from customers, and location (rural or urban towns). Zapata-Cachafeiro et al. 2019 did not find differences in the function of sex and educational training with the irrational antibiotics sales, which is consistent with the aforementioned findings. And, conversely, is not in line with the results by Zawahir et al. 2021. Yet, beliefs in efficacy and competency also play a noticeable role in decision-making across pharmacy staff in Sri Lanka.[28] An explanatory factor investigation by De Tran et al. 2019 focuses on OTC products. Brand of manufacturers, clients, economic, professional education, and quality of drugs are said to variate choices among community pharmacists.

STRENGTHS AND LIMITATIONS

To the best of our knowledge, not only is this one of very few researches viewing what determines the decision of offering ETC medications given the unavailability of physicians' prescriptions in Can Tho city but in Vietnam. Numerous latent constructs have been taken into consideration to explore and shed light on behavioral psychology as well well medical practices. Decades after gaining renown and prominence for universal effects, it appears that Vietnamese academics are unfamiliar with TPB, let alone undertaking research on its premise.

Nevertheless, we are well aware of the limitations. First, this research conducted a survey of 120 out of 630 community pharmacists working at CPs within 1 particular city, a sample size that is scarcely representative. Consequently, the findings withdrawn from the article may neither be generalized to broader regional nor national levels. In the future, the researchers expect to expand both the number of individuals and scopes of study, for instance, licensed pharmacists' choices of OTC products in smaller towns and/or provinces. Second, the data collectors did not track some elements which potentially have skewed the outcomes, such as timing, comprehensiveness, and so on. Last, the effect of knowledge was not extensively analyzed despite its hypothetical relation.

CONCLUSIONS

Explanatory factor analysis is done with a focus on what influences general pharmacy personnel's daily practices relating to prescription drugs in Can Tho city, Vietnam. This study successfully designed and validated a novel, theory-driven instrument that identifies patterns impacting community pharmacists' choices of supplying unauthorized prescription medicines requests. Data analysis indicates that demographic features (gender, age, years of experience, etc) do not statistically associate with the mentioned issue. These are, instead, perceived behavior controls, subjective norms, and positive attitudes. In which, SN has been found to be the strongest effect (accounting for 30.7% of the variance in decision-making) whilst A (-), with a figure of 2.7%, does not show a close connection.

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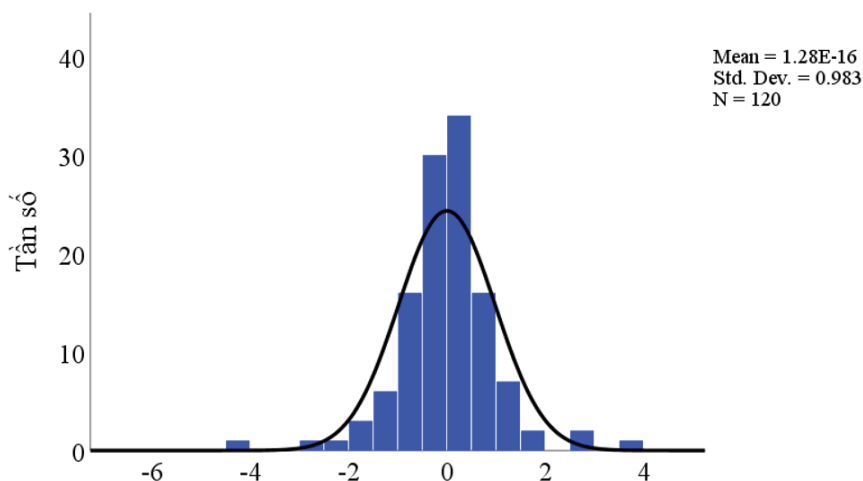
Figure 1. Standardized residual histogram of intent to execute the behavior by CPs

* Tần số = Frequency

Table S1. Attitudes of participants toward DEwP						
Subfactors	**Mean score (SD)**	**Number and percentage of respondents [n (%)]**				
		Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
A1. I think that DEwP helps increase the sales turnover significantly.	2.78 (0.95)	13 (10.8)	30 (25.0)	49 (40.8)	27 (22.5)	1 (0.8)
A2. Antibiotics should be supplied without a prescription if I know that patient could not have enough time and afford to see the physician.	3.21 (1.03)	7 (5.8)	24 (20.0)	34 (28.3)	47 (39.2)	8 (6.7)
A3. I perceive that ETC products can improve the symptoms better than OTC ones.	2.54 (0.99)	16 (13.3)	47 (39.2)	36 (30.0)	18 (15.0)	3 (2.5)
A4. DEwP, in my opinion, is helpful to retain current clients of the pharmacies and gain new ones.	2.55 (1.08)	21 (17.5)	42 (35.0)	31 (25.8)	22 (18.3)	4 (3.3)
A5. DEwP, as far as I acknowledge, is among irrationalities in taking medications.	3.97 (0.87)	2 (1.7)	5 (4.2)	20 (16.7)	61 (50.8)	32 (26.7)
A6. Providing prescription drugs over the counter means violating legal regulations.	3.89 (0.91)	3 (2.5)	6 (5.0)	21 (17.5)	61 (50.8)	29 (24.2)
A7. I think that DEwP would pose a risk of damaging the patients' well-being.	4.06 (0.89)	3 (2.5)	3 (2.5)	17 (14.2)	58 (48.3)	39 (32.5)
DEwP: dispensing ETC medicines without prescriptions						

Table S2. Subjective norms of participants toward DEwP

Subfactors	Mean score (SD)	Number and percentage of respondents [n (%)]				
		Level 1	Level 2	Level 3	Level 4	Level 5
SN1. Most clients do not oppose on DEwP.	3.20 (0.84)	3 (2.5)	20 (16.7)	50 (41.7)	44 (36.7)	3 (2.5)
SN2. I discern that most CPs practice DEwP on a regular basis.	2.57 (0.99)	18 (15.0)	39 (32.5)	43 (35.8)	17 (14.2)	3 (2.5)
SN3. In broad terms, the pharmacy owners do not prohibit their employees from DEwP.	2.54 (0.91)	16 (13.3)	40 (33.3)	48 (40.0)	15 (12.5)	1 (0.8)
SN4. I frequently DEwP either in response to demands or pressure from consumers.	2.78 (0.96)	9 (7.5)	40 (33.3)	43 (35.8)	24 (20.0)	4 (3.3)
SN5. Sales pressure imposed by pharmacy owners will promote the behavior of DEwP.	1.85 (0.77)	39 (32.5)	66 (55.0)	10 (8.3)	4 (3.3)	1 (0.8)
SN6. Personal monthly income constraints drive me to DEwP.	2.05 (0.81)	30 (25.0)	60 (50.0)	24 (20.0)	6 (5.0)	0 (0.0)
DEwP: dispensing ETC medicines without prescriptions						

Table S3. PBCs of participants toward DEwP

Subfactors	Mean score (SD)	Number and percentage of respondents [n (%)]				
		Level 1	Level 2	Level 3	Level 4	Level 5
PBC1. In my view, the sale of ETC medicines is loosely supervised, allowing consumers to procure them without much effort.	2.79 (0.87)	8 (6.7)	35 (29.2)	52 (43.3)	24 (20.0)	1 (0.8)
PBC2. I believe that I have good knowledge to consult properly and sufficient experience in dispensing ETC medicines when necessary.	2.57 (0.94)	16 (13.3)	41 (34.2)	43 (35.8)	19 (15.8)	1 (0.8)
PBC3. I reckon that I have sufficient experience in monitoring the safety and efficacy of DEwP.	3.47 (0.95)	3 (2.5)	18 (15.0)	31 (25.8)	56 (46.7)	12 (10.0)
PBC4. Numerous doctors prescribe and sell medications to patients arbitrarily, some clients thus are not offered a prescription prior to visiting CPs.	3.43 (0.94)	4 (3.3)	15 (12.5)	37 (30.8)	53 (44.2)	11 (9.2)
PBC5. Usually, when getting common symptoms, people do not see the doctor. Instead, they self-medicate, consequently, they do not have a valid prescription.	3.13 (1.04)	8 (6.7)	23 (19.2)	45 (37.5)	33 (27.5)	11 (9.2)
DEwP: dispensing ETC medicines without prescriptions						

Table S4. Intentions to DEwP of participants in some particular settings

Subfactors	Mean score (SD)	Number and percentage of respondents [n (%)]				
		Level 1	Level 2	Level 3	Level 4	Level 5
I1. I would offer ETC medicines with no need for prescriptions in case the client is my acquaintance.	2.12 (0.76)	23 (19.2)	65 (54.2)	27 (22.5)	5 (4.2)	0 (0.0)
I2. I think ETC medicines should be obtained without prescription if the patients failed to see the doctor.	2.68 (0.91)	11 (9.2)	41 (34.2)	45 (37.5)	22 (18.3)	1 (0.8)
I3. I would dispense ETC products without prescription if the customer has been working in the medical sector.	2.58 (0.94)	15 (12.5)	41 (34.2)	45 (37.5)	17 (14.2)	2 (1.7)
I4. I would provide prescription medications over the counter at times when I suppose that there is no medical inspection.	2.03 (0.79)	30 (25.0)	63 (52.5)	21 (17.5)	6 (5.0)	0 (0.0)
I5. I would supply ETC medicines without prescription regardless of the presence of cameras and surveillance of my activities.	1.77 (0.69)	44 (36.7)	62 (51.7)	12 (10.0)	2 (1.7)	0 (0.0)
I6. I would continue to sell prescription drugs over the counter even if the penalty rises.	1.91 (0.77)	36 (30.0)	64 (53.3)	15 (12.5)	5 (4.2)	0 (0.0)

Table S5. Attitudes of respondents towards illegitimate dispense of ETC drugs		
Subfactors	Item-total correlation	Scale if item deleted
A1. I think that DEwP helps increase the sales turnover significantly.	0.515	0.670
A2. Antibiotics should be supplied without a prescription if I know that patient could not have enough time and afford to see the physician.	0.397	0.700
A3. I perceive that ETC products can improve the symptoms better than OTC ones.	0.546	0.661
A4. DEwP, in my opinion, is helpful to retain current clients of the pharmacies and gain new ones.	0.489	0.676
A5. DEwP, as far as I acknowledge, is among irrationalities in taking medications.	0.374	0.703
A6. Providing prescription drugs over the counter means violating legal regulations.	0.352	0.709
A7. I think that DEwP would pose a risk of damaging the patients' well-being.	0.358	0.707
Cronbach's alpha: 0.722 DEwP: dispensing ETC medicines without prescriptions		

Table S6. SN of respondents toward illegitimate dispense of ETC drugs		
Subfactors	Item-total correlation	Scale if question deleted
SN1. Most clients do not oppose DEwP.	0.364	0.788
SN2. I discern that most CPs practice DEwP on a regular basis.	0.680	0.709
SN3. In broad terms. the pharmacy owners do not prohibit their employees from DEwP.	0.452	0.770
SN4. I frequently DEwP either in response to demands or pressure from consumers.	0.643	0.720
SN5. Sales pressure imposed by pharmacy owners will promote the behavior of DEwP.	0.550	0.748
SN6. Personal monthly income constraints drive me to DEwP.	0.513	0.755
Cronbach's alpha: 0.783 DEwP: dispensing ETC medicines without prescriptions		

Table S7. PBC of respondents toward illegitimate dispense of ETC drugs		
Subfactors	Item-total correlation	Scale if item deleted
PBC1. In my view, the sale of ETC medicines is loosely supervised, allowing consumers to procure them without much effort.	0.443	0.811
PBC2. I believe that I have good knowledge to consult properly and sufficient experience in dispensing ETC medicines when necessary.	0.568	0.777
PBC3. I reckon that I have sufficient experience in monitoring the safety and efficacy of DEwP.	0.606	0.765
PBC4. Numerous doctors prescribe and sell medications to patients arbitrarily, some clients thus are not offered a prescription prior to visiting CPs.	0.642	0.754
PBC5. Usually, when getting common symptoms, people do not see a doctor. Instead, they self-medicate, consequently, they do not have a valid prescription.	0.706	0.731
Cronbach's alpha: 0.807 DEwP: dispensing ETC medicines without prescriptions		

Table S8. Intentions of respondents to execute the illegitimate dispense of ETC drugs		
Subfactors	Item-total correlation	Scale if question deleted
I1. I would offer ETC medicines with no need for prescriptions in case the client is my acquaintance.	0.803	0.840
I2. I think ETC medicines should be obtained without prescription if the patients failed to see the doctor.	0.627	0.870
I3. I would dispense ETC products without prescription if the customer has been working in the medical sector.	0.688	0.860
I4. I would provide prescription medications over the counter at times when I suppose that there is no medical inspection.	0.656	0.863
I5. I would supply ETC medicines without prescription regardless of the presence of cameras and surveillance of my activities.	0.709	0.856
I6. I would continue to sell prescription drugs over the counter even if the penalty rises.	0.677	0.860
Cronbach's alpha: 0.879		