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## Original Research

# Work fatigue among Lebanese community pharmacists: prevalence and correlates

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### Abstract

**Objective:** To assess work fatigue and its associated factors among community pharmacists in Lebanon.

**Methods:** This cross-sectional study was conducted between March and July 2018. A proportionate sample of 435 community pharmacists was selected from all regions of Lebanon. A standardized self-administered questionnaire, distributed by trained interviewers, was used to assess the studied variables.

**Results:** The results showed that 50.12% of the pharmacists had emotional work fatigue [95%CI 0.454-0.549], 55.01% had mental work fatigue [95%CI 0.503-0.597], and 54.78% had physical work fatigue [95%CI 0.501-0.595]. Higher mental work fatigue was significantly associated with higher stress (Beta=0.185) and having a master's degree compared to a bachelor's degree (Beta=2.23). Higher emotional work fatigue was significantly associated with higher stress (Beta=0.219), working more than 40 hours compared to ≤ 16 hours (Beta=2.742), and having 6 months to less than 1 year of practice compared to less than 6 months (Beta=-5.238). Higher physical work fatigue was significantly associated with higher stress (Beta=0.169) and having better soft skills (Beta=-0.163).

**Conclusions:** Work-related fatigue is high among community pharmacists and touches all aspects: physical, mental, and emotional. In our study, community pharmacists' fatigue levels were associated with educational level, years of experience, working hours, stress, depression, and soft skills, while no relation was found with gender, age, position in the pharmacy, and economic status. Interventions are recommended to tackle this public health problem that affects pharmacists, and eventually, patients.

### Keywords

Pharmacists; Occupational Stress; Fatigue; Depression; Professional Practice; Pharmacies; Community Pharmacy Services; Risk Factors; Multivariate Analysis; Lebanon

## INTRODUCTION

Work fatigue is related to extreme tiredness and diminished functional capacity that is experienced during and at the end of the workday. Work fatigue has three main dimensions which are physical, mental, and emotional. Physical work fatigue represents massive physical exhaustion and reduced capacity to get involved in physical activity that is experienced during and at the end of the workday. Whereas, mental and emotional work fatigue come from extreme mental and emotional tiredness and decreased ability to engage in cognitive and emotional activities respectively.<sup>1</sup> However, prolonged or chronic work stress can lead to burnout which is characterized by physical and emotional exhaustion that also involves a sense of reduced accomplishment and loss of personal identity.<sup>2</sup>

The pharmacy profession is a highly demanding career; however, this does not usually contribute to work fatigue. Instead, work fatigue generally occurs when the pharmacist feels overwhelmed or underestimated, with professional and personal pressures also playing a role (3). Pharmacists' work fatigue generally results from sustained stress, work-life imbalance, unproductive work environments, and injustice in the workplace; its prevalence increases when pharmacists are required to deal with multiple duties including dispensing medications, counseling, and answering phone calls. Having to multitask without taking breaks would also lead to depersonalization and apathy.<sup>4,5</sup> Such environment can be detrimental to health institutions. When multiple workflow factors seem hazardous or uncontrollable, the pharmacy environment becomes progressively chaotic, especially during emergency situations, vacations, or regular rush hours.<sup>6,7</sup>

Pharmacists' work fatigue can have significant consequences, including lower quality of patient care, patient safety issues, and increased employee turnover; it can also have an impact on personal and social life and make the pharmacist more susceptible to illness.<sup>8</sup> Several mechanisms can explain susceptibility to illness. Firstly, work fatigue rewires the brain. In fact, people complaining from work fatigue symptoms have a lower control on their emotions in stressful situations. The more stressed the person is, the more difficult it is to handle further stressors in different aspects of life.<sup>9,10</sup> Work fatigue can, therefore, impede both personal and social aspects of life, and may lead to a deterioration in work and personal relationships.<sup>11</sup> Secondly, professional work fatigue hugely interferes with

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personal life. When workplace requirements exceed the pharmacists' capabilities during the day, many of them try to complete their tasks at home, thereby affecting their relationship with their families. In addition to this, work fatigue usually leads to depression and hence can affect all types of personal relationships.<sup>12</sup> Work fatigue may affect the pharmacists' health, as several studies have found a positive correlation between work fatigue and psychological and physical illnesses.<sup>13</sup> Symptoms described by pharmacists at the end of their working day included neck pain (62%), eye fatigue (44%), hand pain (38%) and insomnia (34%).<sup>8,14</sup>

Work fatigue among pharmacists is still increasing worldwide, varying by countries. Previous findings demonstrated that 66% of pharmacists acknowledged their workload being high to excessively high, which was reported to adversely affect the emotional and mental health of 45% of the participants. Another study among U.S. hospital pharmacists revealed that the work fatigue rate was high (61.2%) and mainly caused by high emotional fatigue.<sup>5,15</sup> A 2017 study among U.S. clinical pharmacists found that more than 61% complained of work fatigue.<sup>16,17</sup> In 2018, a survey conducted by the American Society of Health-System Pharmacists showed that 53% of pharmacists reported a high degree of work fatigue due to increasing stress and job requirements.<sup>16,17</sup> In France, a recent nationwide study revealed that the reported prevalence of burnout among community pharmacists was 56.2%, while in Turkey, 71.3% of community pharmacists had a high level of inefficacy due to work fatigue.<sup>14,18</sup>

As for Lebanon, data are scarce. A recent study has shown that the financial situation of community pharmacists has deteriorated; monthly sales and profits have dramatically declined in the last years, as has the number of patients.<sup>19</sup> On the other hand, pharmacy expenses, such as the rent, salaries of employees, taxes, the total bills (electricity, water, cleaning), and the disposal of expired products, have significantly increased.<sup>19</sup> In this context, this study was conducted to assess work fatigue and its associated factors among community pharmacists in Lebanon.

## METHODS

### Study design

Between March and July 2018, a cross-sectional study was conducted using a proportionate number of community pharmacies from all Lebanese districts, according to the exhaustive list of pharmacies issued by the Order of Pharmacists of Lebanon (OPL) [N.B.: the official association of pharmacists in Lebanon].

The study protocol was approved by the Ethics committee at the Psychiatric Hospital of the Cross (HPC-006-2019). Each pharmacist signed a written informed consent prior to enrollment.

The Epi info software calculated a minimal sample size of 350 pharmacists to provide adequate power for bivariate and multivariate analyzes, based on a total number of 3,762 pharmacists working in community pharmacies in Lebanon, expected frequency of 50% of pharmacists with work fatigue (as there are no comparable studies in Lebanon), a confidence interval of 95%. At the end of the

data collection, 435 (87%) out of 500 questionnaires were collected back.

### Questionnaires and variables

The self-administered questionnaire was distributed in either French or English, (the teaching languages of pharmacy in Lebanon), and required 20 minutes approximately to complete. It was distributed to pharmacists by well-trained interviewers, who did not guide the participants in their answers to ensure optimal objectivity. Each pharmacist would put the filled survey in a closed box to preserve his/her anonymity. Data analysis was anonymous and confidential.

The questionnaire consisted of two sections. Information about socio-demographics and practice features were collected in the first section, as well as the geographic area of residence, pharmacy location, the average patients' number visiting the pharmacy daily, years of experience and the house crowding index. In addition, the social status of the patients entering the pharmacy was self-reported by each community pharmacist. The second part included the following scales:

#### The Three-Dimensional Work Fatigue Inventory (3D-WFI)

It consists of 18 questions divided into 3 parts of 6 questions each, evaluating physical, mental and emotional work fatigue respectively.<sup>1</sup> In all 3 dimensions, work fatigue increases with higher scores. The Cronbach's alpha values were as follows: physical (0.880), mental (0.710) and emotional (0.848).

#### Hamilton depression rating scale (HDRS)

The validated Arabic version of HDRS was used in this study.<sup>20</sup> The score is based on the first 17 items, with higher scores indicating higher depression (Cronbach's alpha=0.870).<sup>21</sup>

#### Beirut Distress Scale (BDS-22 scale)

This scale, validated in Lebanon, consisted of 22 questions that assess the level of stress during the last week, with higher scores reflecting higher levels of stress (Cronbach's alpha=0.935).<sup>22</sup>

#### Lebanese Insomnia Scale (LIS-18)

This 18-item scale, developed from several validated and universally applicable self-report scales and recently validated in Lebanon, is used to screen for insomnia in adults.<sup>24</sup> Higher scores indicate higher insomnia (Cronbach's alpha =0.811).

#### Soft Skills Questionnaire: The Social and Emotional Nationwide Assessment (SENNA 1.0) short version

This 24-item questionnaire is used to evaluate soft skills. It measures six dimensions: Conscientiousness, Neuroticism, Agreeableness, Openness to Experience, Extraversion, and External Locus of Control.<sup>23</sup> Higher scores indicate better soft skills (Cronbach's alpha=0.757).

### Forward and back-translation procedure

A forward (from English to French) and backward translation process was performed by two independent translators. Discrepancies were resolved by consensus. Before starting data collection, both versions were pilot-

Table 1. Sociodemographic and socioeconomic characteristics of the participants (n= 435)	
Factor	N (%)
Gender: Male	223 (52.0%)
Governorate	
Beirut	77 (18.0%)
Mount Lebanon	150 (35.1%)
North	66 (15.5%)
South	48 (11.2%)
Bekaa	48 (11.2%)
Educational level	
Bachelor of science	250 (58.4%)
Pharm.D.	106 (24.8%)
Masters	60 (14.0%)
PhD	12 (2.8%)
Professional status	
Owner	299 (68.7%)
Assistant pharmacist	128 (30.0%)
Experience	
Less than 6 months	24 (5.6%)
6 months to 1 year	20 (4.6%)
1 year to less than 3 years	36 (8.4%)
3 years to less than 6 years	64 (14.8%)
6 years to less than 12 years	118 (27.4%)
More than 12 years	169 (39.2%)
Approximate number of patients seen per day in the pharmacy	
< 10	3 (0.7%)
10-50	131 (30.8%)
50-100	188 (44.2%)
> 100	103 (24.2%)
Working hours per week	
1-16 hours per week	27 (6.3%)
17-31 hours per week	48 (11.2%)
32-40 hours per week	96 (22.3%)
More than 40 hours per week	259 (60.2%)
Social status of the majority of patients	
Poor	26 (6.1%)
Middle	193 (45.6%)
High	16 (3.8%)
Do not know	185 (43.7%)
Family income per month	
<1000 USD	35 (8.9%)
1000-2000 USD	90 (20.7%)
2000-3000 USD	129 (32.7%)
>3000 USD	140 (35.5%)
	Mean (SD)
Age (in years)	38.97 (11.13)
House crowding index	0.89 (0.44)

tested on 20 pharmacists; the results recorded were disregarded in the final database.

### Data analysis

The data entry was carried out by a study-independent person, and statistical analysis was performed on SPSS version 23. The Student t-test was used to compare work fatigue and dichotomous variables, and the ANOVA test was applied to compare between 3 or more groups. Finally, a stepwise linear regression was computed by taking the scores of work fatigue subscales as dependent variables, and variables showing a significant association in the bivariate analysis as independent variables. A  $p < 0.05$  was considered statistically significant.

## RESULTS

Out of the 500 distributed questionnaires, 435 (87%) were completed and collected back. The socio-demographic

characteristics are summarized in table 1. The mean age of participants was  $39 \pm 11$  years, with 206 (47.4%) females. The majority of participants were pharmacy owners ( $n = 299$ , 68.7%), 169 (38.9%) had more than 12 years of experience, around 60% ( $n = 259$ ) worked more than 40 hours a week, and 188 (43.2%) reported a daily patients' load between 50 and 100 patients (Table 1). In the absence of cutoff points for the 3D-WFI scale, the medians of the physical, mental, and emotional work fatigue scores were taken as the cutoff points. The results showed that 50.12% of the pharmacists had emotional work fatigue [95%CI 0.454-0.549], 55.01% had mental work fatigue [95%CI 0.503-0.597], and 54.78% had physical work fatigue [95%CI 0.501-0.595].

The scores of the scales included in the survey are presented in Table 2. The emotional work fatigue score was the highest among fatigue scores. The remaining scores, such as stress, insomnia, and soft skills were high, while the mean of depression score (6.9) was less than 10, indicating no symptoms of depression among community pharmacists.

A significantly higher mean mental work fatigue was found among pharmacists with a Master's degree compared to those with other degrees. Higher stress, insomnia, and depression were significantly associated with higher mental work fatigue.

A significantly higher emotional work fatigue was found in those having between 3 and less than 6 years of experience compared to all other categories, in those working up to 16 hours compared to all other categories, and in owners compared to assistant pharmacists. Moreover, higher stress, insomnia, and depression were significantly but weakly associated with higher emotional work fatigue. Higher stress, insomnia, depression, and having better soft skills were significantly but weakly associated with higher physical work fatigue (Table 3).

Higher mental work fatigue was significantly associated with higher stress ( $\text{Beta} = 0.185$ ) and having a master's degree compared to a bachelor's degree ( $\text{Beta} = 2.23$ ) (Table 4, Model 1).

Higher emotional work fatigue was significantly associated with higher stress ( $\text{Beta} = 0.219$ ), working more than 40 hours compared to up to 16 hours ( $\text{Beta} = 2.742$ ), and having 6 months to less than 1 year of practice compared to less than 6 months ( $\text{Beta} = -5.238$ ) (Table 4, Model 2).

Higher physical work fatigue was significantly associated with higher stress ( $\text{Beta} = 0.169$ ) and having better soft skills ( $\text{Beta} = -0.163$ ) (Table 4, Model 3).

Table 2. Scores for different questionnaires in the surveys delivered for community pharmacists	
Score	Mean (SD)
Stress score	42.37 (13.49)
Insomnia score	37.53 (8.44)
Depression score	6.90 (7.01)
Emotional work fatigue score	17.38 (10.42)
Mental work fatigue score	8.36 (6.50)
Physical work fatigue score	7.63 (8.29)
Soft skills score	75.80 (10.88)

Table 3. Bivariate analysis of factors associated with the work fatigue subscales scores

Variable	Mental work fatigue		Emotional work fatigue		Physical work fatigue	
	Mean (SD)	p-value	Mean (SD)	p-value	Mean (SD)	p-value
Gender		0.135		0.093		0.778
Female	8.82 (6.61)		18.25 (10.75)		7.75 (8.43)	
Male	7.87 (6.37)		16.55 (9.95)		7.52 (8.11)	
Education		0.008		0.133		0.648
BS	7.72 (5.70)		16.79 (10.01)		7.72 (8.10)	
Pharm.D	8.65 (6.29)		17.46 (10.37)		6.67 (7.56)	
Master	10.79 (9.38)		20.37 (11.94)		7.94 (9.52)	
PhD	6.66 (4.00)		17.50 (10.75)		8.66 (9.69)	
Family monthly income		0.732		0.332		0.103
<1000 USD	7.80 (5.71)		15.62 (8.87)		9.82 (8.91)	
1000-1999 USD	8.21 (6.70)		18.60 (10.46)		8.36 (8.52)	
2000-2999 USD	8.96 (7.31)		16.46 (10.97)		8.10 (8.55)	
3000 USD and above	8.31 (6.10)		17.81 (10.25)		6.43 (7.98)	
Years of experience		0.078		0.005		0.236
Less than 6 months	8.50 (5.52)		12.45 (8.23)		6.20 (4.73)	
6 months to less than 1 year	4.42 (4.12)		11.15 (9.62)		5.10 (1.17)	
Between 1 and less than 3 years	9.66 (6.85)		15.47 (8.45)		10.08 (10.62)	
Between 3 and less than 6 years	8.75 (7.48)		18.85 (9.98)		7.58 (7.72)	
Between 6 and less than 12 years	8.88 (6.11)		18.37 (10.33)		8.12 (8.43)	
12 years and above	8.00 (6.57)		18.15 (10.04)		7.26 (8.38)	
Number of working hours		0.338		0.016		0.830
Up to 16 hours	10.51 (6.45)		19.70 (10.38)		8.03 (9.79)	
Between 17 and 31 hours	8.04 (5.33)		15.56 (9.33)		7.20 (5.99)	
Between 32 and 40 hours	7.98 (6.02)		15.11 (9.10)		8.26 (8.21)	
> 40 hours	8.40 (6.89)		18.52 (10.90)		7.43 (8.51)	
Patients' load per day		0.828		0.906		0.570
< 50	6.00		17.05 (10.88)		7.19 (7.64)	
50-100	-		17.56 (10.33)		7.61 (7.83)	
>100	-		17.44 (9.62)		8.35 (9.83)	
Position in the pharmacy		0.925		0.037		0.324
Owner	8.42 (6.75)		18.12 (11.09)		7.38 (8.44)	
Assistant pharmacist	8.36 (5.94)		15.79 (8.66)		8.26 (7.92)	
Age	r=-0.016	0.750	r=0.038	0.440	r=-0.071	0.155
House crowding index	r=-0.04	0.443	r=-0.001	0.979	r=-0.037	0.485
BDS-22 score	r=0.408	<0.001	r=0.284	<0.001	r=0.341	<0.001
Insomnia score	r=0.127	0.009	r=0.111	0.023	r=0.188	<0.001
Soft skills	r=0.053	0.280	r=0.088	0.069	r=-0.220	<0.001
Hamilton depression score	r=0.116	0.017	r=0.113	0.020	r=0.118	0.016

## DISCUSSION

This study is the first to assess work fatigue among Lebanese community pharmacists nationwide. The scores of emotional, mental, and physical work fatigue indicated a considerable level of fatigue among community pharmacists, whether pharmacy owners or assistant pharmacists. In our study, levels of work fatigue among community pharmacists were associated with educational level, years of experience, number of working hours, stress,

depression, and soft skills. However, no relation was found between work fatigue and gender, age, position in the pharmacy, and economic status.

Our results showed that stress score was positively associated with mental, emotional, and physical fatigue scores, in line with former findings among New Zealand health professionals, where high levels of stress among pharmacists were associated with severe work fatigue, and a decline in quality of life and service provision.<sup>24</sup> Stress

Table 4. Multivariable analysis of factors associated with the burnout subscales scores.

Variable	Unstandardized beta	Standardized beta	p-value	Confidence Interval
Model 1: Stepwise linear regression taking the mental work fatigue score as the dependent variable. Variables entered in model 1: stress, insomnia, depression, soft skills.				
Stress (BDS-22 score)	0.185	0.381	<0.001	0.141:0.228
Master degree compared to bachelor	2.230	0.119	0.008	0.590:3.870
Model 2: Stepwise linear regression taking the emotional work fatigue score as the dependent variable. Variables entered in model 2: Education level, stress, insomnia, depression.				
Stress (BDS-22 score)	0.219	0.284	<0.001	0.149:0.290
Working more than 40 hours compared to ≤ 16 hours	2.742	0.129	0.006	0.810:4.673
Having 6 months to less than 1 year of practice compared to less than 6 months	-5.238	-0.105	0.025	-9.801:-0.676
Model 3: Stepwise linear regression taking the physical work fatigue score as the dependent variable. Variables entered in model 3: Years of practice, working hours, stress, insomnia, depression.				
Stress (BDS-22 score)	0.169	0.272	<0.001	0.115:0.222
Soft skills score	-0.163	-0.191	<0.001	-0.236:-0.091



levels among Lebanese community pharmacists have been reported to be highly correlated with various socioeconomic issues in the country.<sup>25</sup> Moreover, work-related stressors such as excessive workload, frequent interruptions by phone calls or others, and lack of adequate staff were associated with high work stress. Lebanese pharmacists also reported being frequently engaged in stressful activities such as those related to drug repricing and changes in reimbursement conditions; these tasks that do not require pharmaceutical knowledge or skills, lead to an increased risk of stress.<sup>19</sup> Another study of stress and job satisfaction among pharmacists in Saudi Arabia highlighted similar job-related stressors, such as the pharmacy setting, long working hours, difficulty in obtaining casual or sick leave, and low salaries.<sup>26</sup> Several other studies have also demonstrated a high level of stress among pharmacists due to workload, work environment, and decreased quality of work. A study in France had found a high level of work-related stress in a large number of community pharmacies, with more than 30% of participants massively affected, whether owners or assistant pharmacists.<sup>27</sup> Also, a study in Japan reported a high prevalence of psychological distress, thus high work fatigue among pharmacists, while a study in Ireland showed that community pharmacists had high levels of work-related stress.<sup>26,28</sup>

In our study, the level of education was found to be a major determinant of mental work fatigue. Holders of a master's degree had significantly higher levels of mental work fatigue compared to holders of a BS degree. To have a better understanding, it is worth describing the pharmacy curriculum in Lebanon. The pharmacy curriculum consists of studying 5 years leading to a Bachelor of Science (BS) degree with an additional year to obtain a Doctor of Pharmacy degree (PharmD) which is optional in some universities. In addition, there are several specialties for postgraduate studies such as Masters and PhD. Regardless the obtained degree, the pharmacist should pass the "colloquium" – which is the national licensure examination necessary to apply for a license to practice pharmacy – and then become registered in the OPL to be eligible to practice pharmacy profession.<sup>29</sup>

Regarding our finding, there are several possible explanations: higher involvement in patient care activities, including patient education and counseling for chronic diseases; the major changes in the pharmacy profession, emphasizing the pharmacist's role as a medication therapy expert rather than a drug expert solely; and demotivation resulting from the feeling of being overqualified for the job required.<sup>30-32</sup>

Our results also demonstrated a negative association between the number of years of practice and emotional work fatigue. Indeed, pharmacists with more than six months of practice had lower emotional work fatigue compared to those with less than a 6-month practice. These results are consistent with those of a study among hospital pharmacists in Japan reporting that work-related fatigue decreased with years of experience.<sup>28</sup> This finding was also similar to that of a systematic review on the prevalence of work fatigue among health care professionals in the Arab countries where a higher number of years of experience was associated with lower levels of work fatigue

among Iranian nurses and Saudi Arabian physiotherapists.<sup>7</sup> This can be explained by a resistance to work fatigue that may develop over the years of experience.

Our results also showed that work fatigue significantly increased with prolonged working hours (more than 40 hours). This finding was reported in previous studies highlighting its massive consequences on professional practice. The detrimental effects of fatigue on both the pharmacist and the patient are well documented in the literature. Indeed, long working hours and subsequent exhaustion trigger an alarm for patient safety, with the increased risk of medication errors that might result.<sup>7,33,34</sup>

Furthermore, our study showed that work fatigue significantly decreased with higher soft skills, similar to findings from other studies conducted on different health care providers. These studies revealed that fatigued workers usually have poor communication with their work environment and get easily angry with others, and thus have the highest rate of disastrous incidents. However, pharmacists with higher soft skills have higher self-confidence and improved interpersonal relationships and communication skills, which improves their performance with fewer efforts. Therefore, training pharmacists in communication skills improves their self-efficacy in stressful situations and increases their adaptability, as well as work accomplishment and success.<sup>35,36</sup>

### Clinical implications

This study triggers an alarm towards the increasing levels of work fatigue among community pharmacists and unveils several associated factors. Hence, from the findings of our study, several interventions can be recommended to reduce the burden of work fatigue and avoid its massive consequences on physical and psychological health, and thus improve pharmacists' performance and the quality of services provided. Working hours can be reduced, and work appreciation increased on the financial and personal levels. Training pharmacists to improve their communication skills is as important as monitoring their work fatigue to develop strategies aiming to prevent this global problem.

### Limitations and strengths

This study has some limitations. Its cross-sectional design does not allow for any clear temporal sequence between socioeconomic or psychological factors and work fatigue. The 3D-WFI is not validated for use in Lebanon. An information bias is possible because of over/under estimation of an answer and subjectivity (patients' social status). Thus, associations need to be further assessed by qualitative and longitudinal studies. Furthermore, additional confounding related to personality characteristics and work fatigue could be examined in future research.

However, some strengths could be highlighted. Indeed, this study is the first to address work fatigue among a representative sample of Lebanese community pharmacists. Moreover, selection bias was minimized by sampling from different geographical areas and the high response rate (87%). Finally, information biases were limited by the use of a self-administered anonymous standardized questionnaire and validated scales to measure subjective data.

## CONCLUSIONS

In conclusion, work-related fatigue is high among community pharmacists and touches all aspects: physical, mental, and emotional. In our study, community pharmacists' fatigue levels were associated with educational level, years of experience, working hours, stress, depression, and soft skills, while no relation was found with gender, age, position in the pharmacy, and economic status. Interventions are recommended to tackle this public health problem that affects pharmacists, and eventually, patients.

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## CONFLICT OF INTEREST

The authors have no conflicts of interest to disclose.

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