一、為瞭解社區長者晚年憂鬱(late-life depression)與輕度認知障礙(mild cognitive impairment, MCI)及失智(dementia)的相關性，研究者於社區中2160位65歲以上之長者，於招募時使用憂鬱症量表(the Center for Epidemiological Studies Depression scale, CES-D)，檢測其憂鬱狀況，將研究對象分為有憂鬱情況與無憂鬱情況，於18至24個月後再進行追蹤評估其輕度認知障礙與失智的狀況。請根據下列所提供之表格回答問題：（25分）

1、請根據Table1回答下列問題：（15分）
（1）請問作者使用何種統計檢定兩組教育程度之差異，以及兩組是否有顯著差異？
（2）請問作者使用何種統計檢定兩組種族分布是否有差異？是否有顯著差異？
（3）請問兩組之間有哪些基本特性有顯著差異呢？

Table 1. Baseline Characteristics of Participants With and Without Depression

Characteristic	Depressed, CES-D ≥4 (n = 452)	Not Depressed, CES-D <4 (n = 1708)	P Value
Age, mean (SD), y	77.7 (7.2)	76.7 (7.0)	.01
Male sex, %	36.2	22.1	<.001
Educational level, mean (SD), y	9.0 (4.8)	10.6 (4.8)	<.001
Ethnicity, %			
White	25.4	30.8	
Black	23.7	34.9	<.001
Hispanic	49.8	32.7	
Vascular risk factors, %			
Hypertension	48.4	48.0	.91
Diabetes mellitus	19.7	19.3	.84
Total cholesterol level, mean (SD), mg/dL	200.3 (39.2)	198.4 (39.0)	.45
Smoking	10.0	10.4	.86
BMI >30	28.6	28.6	.99
Depressed episode in the past, %	32.5	11.7	<.001
Antidepressant use, %	19.5	4.8	<.001
APOEε4 allele, %	28.9	27.0	.47

2、請問根據Table 3回答下列問題：（10分）
（1）請問根據model 3之結果，憂鬱是否會增加長者發生輕度認知障礙之風險？如果是，請說明增加哪些輕度認知障礙，以及風險分別為多少？
（2）請問根據model 3之結果，憂鬱是否會增加長者發生失智之風險？如果是，請說明增加哪些失智風險，以及風險分別為多少？

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Table 3. Longitudinal Analyses Using Proportional Hazards Models Relating Depression With Incident MCI and Dementia[a]

Characteristic	No. At Risk	No. Cases	HR (95% CI) Model 1	HR (95% CI) Model 2[b]	HR (95% CI) Model 3[c]
MCI as Outcome					
All MCI (n = 304)					
No depression	1209	257	1 [Reference]	1 [Reference]	1 [Reference]
Depression	266	47	0.9 (0.7-1.2)	0.8 (0.6-1.2)	1.0 (0.7-1.5)
Amnestic MCI (n = 151)					
No depression	1076	124	1 [Reference]	1 [Reference]	1 [Reference]
Depression	248	29	1.1 (0.7-1.7)	1.0 (0.6-1.6)	1.3 (0.8-2.1)
Nonamnestic MCI (n = 153)					
No depression	1085	133	1 [Reference]	1 [Reference]	1 [Reference]
Depression	237	18	0.7 (0.4-1.1)	0.6 (0.3-1.0)	0.8 (0.4-1.4)
Dementia as Outcome					
All dementia (n = 207)					
No depression	1567	155	1 [Reference]	1 [Reference]	1 [Reference]
Depression	376	52	1.7 (1.2-2.3)	1.6 (1.1-2.3)	1.8 (1.2-2.7)
AD without vascular component (n = 167)					
No depression	1537	125	1 [Reference]	1 [Reference]	1 [Reference]
Depression	366	42	1.7 (1.2-2.5)	1.6 (1.1-2.4)	1.9 (1.2-2.9)
VaD, including AD with stroke (n = 29)					
No depression	1434	22	1 [Reference]	1 [Reference]	1 [Reference]
Depression	331	7	1.6 (0.7-3.8)	1.3 (0.5-3.5)	1.7 (0.5-5.6)

Abbreviations: AD, Alzheimer disease; HR, hazard ratio; MCI, mild cognitive impairment; VaD, vascular dementia.
[a] Model 1 was adjusted for age and sex; model 2 was additionally adjusted for educational level and ethnicity; and model 3 was adjusted for age, sex, and vascular risk factors.
[b] Based on a sample of 1645 individuals in whom *APOE* genotype was available.
[c] Based on a sample of 1399 individuals in whom the vascular risk score could be determined, including all 5 risk factors.

二、跌倒是臺灣社區長者常見的問題，請問臺灣社區中 65 歲以上的長者每年跌倒的發生率大約多少％（5分）？請說明長者發生跌倒的相關因素（10分）？社區衛生護理師應如何擬定相關照護措施，以預防長者跌倒的發生（10分）？

三、COVID-19 疫情始於 2019 年末，在 2020 年迅速擴散至不同國家。疫情至今，已有文獻指出社區長者心理健康應受到重視。請問社區長者在疫情期間易面臨的心理健康問題包含哪些？並請結合現有社區資源研擬相對應的健康促進策略（20分）。

四、請閱讀以下取自 2021 年刊登於 New England Journal of Medicine 的期刊論文「Preliminary Findings of mRNA Covid-19 Vaccine Safety in Pregnant Persons」之摘錄內容，並回答問題：（30分）

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The first coronavirus disease 2019 (Covid-19) vaccines available in the United States were messenger RNA (mRNA) vaccines: BNT162b2 (Pfizer–BioNTech) and mRNA-1273 (Moderna). In December 2020, the vaccines were granted Emergency Use Authorization (EUA) by the Food and Drug Administration (FDA) as a two-dose series, 3 weeks apart for Pfizer–BioNTech and 1 month apart for Moderna, and were recommended for use by the Advisory Committee on Immunization Practices (ACIP). Pregnant persons were excluded from preauthorization clinical trials, and only limited human data on safety during pregnancy were available at the time of authorization. However, pregnant persons with Covid-19 are at increased risk for severe illness and death, as compared with nonpregnant persons of reproductive age. Furthermore, pregnant persons with Covid-19 might be at increased risk for adverse pregnancy outcomes, such as preterm birth, as compared with pregnant persons without Covid-19. The Centers for Disease Control and Prevention (CDC) and ACIP, in collaboration with the American College of Obstetricians and Gynecologists and the American Academy of Pediatrics, have issued guidance indicating that Covid-19 vaccines should not be withheld from pregnant persons.

Postauthorization monitoring in pregnant persons is necessary to characterize the safety of these new Covid-19 vaccines. Furthermore, establishing their safety profiles is critical to inform recommendations on maternal vaccination against Covid-19. We report preliminary findings of mRNA Covid-19 vaccine safety in pregnant persons from three U.S. vaccine safety monitoring systems: the "v-safe after vaccination health checker" surveillance system, the v-safe pregnancy registry, and the Vaccine Adverse Event Reporting System (VAERS).

Methods: Data source
➢ V-safe Surveillance System and Pregnancy Registry

V-safe is a new CDC smartphone-based active-surveillance system developed for the Covid-19 vaccination program; enrollment is voluntary. V-safe sends text messages to participants with weblinks to online surveys that assess for adverse reactions and health status during a postvaccination follow-up period. Follow-up continues 12 months after the final dose of a Covid-19 vaccine. During the first week after vaccination with any dose of a Covid-19 vaccine, participants are prompted to report local and systemic signs and symptoms during daily surveys and rank them as mild, moderate, or severe; surveys at all time points assess for events of adverse health effects. If participants indicate that they required medical care at any time point, they are asked to complete a report to the VAERS through active telephone outreach.

To identify persons who received one or both Covid-19 vaccine doses while pregnant or who became pregnant after Covid-19 vaccination, v-safe surveys include pregnancy questions for persons who do not report their sex as male. Persons who identify as pregnant are then contacted by telephone and, if they meet inclusion criteria, are offered enrollment in the v-safe pregnancy registry. Eligible persons are those who received vaccination during pregnancy or in the periconception period (30 days before the last menstrual period through 14 days after) and are 18 years of age or older. For persons who choose to enroll, the pregnancy registry telephone-based survey collects detailed information about the participant, including medical and obstetric history, pregnancy complications, birth outcomes, and contact information for obstetric and pediatric health care providers to obtain medical records; infants are followed through the first 3 months of life.

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> VAERS

The VAERS is a national spontaneous-reporting (passive-surveillance) system established in 1990 that is administered by the CDC and the FDA. Anyone can submit a report to the VAERS. Health care providers are required to report certain adverse events after vaccination, including pregnancy-related complications resulting in hospitalization and congenital anomalies, under the conditions of the EUAs for Covid-19 vaccines; the CDC encourages reporting of any clinically significant maternal and infant adverse events. Signs and symptoms of adverse events are coded with the use of the Medical Dictionary for Regulatory Activities (MedDRA), version 23.1. We used a pregnancy-status question in the VAERS form and a MedDRA code and text-string search to identify reports involving vaccination in pregnant persons.
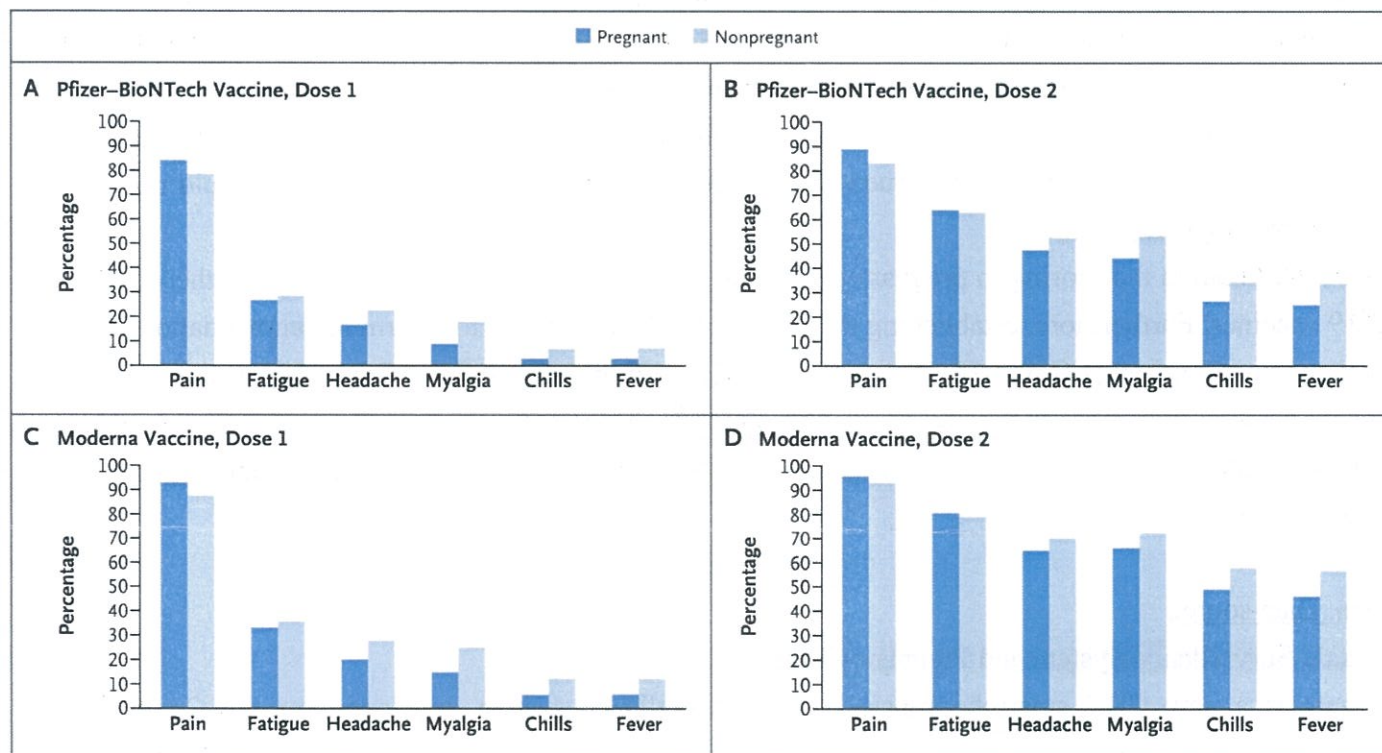
Results

Figure 1. Most Frequent Local and Systemic Reactions Reported in the V-safe Surveillance System on the Day after mRNA Covid-19 Vaccination.

Shown are solicited reactions in pregnant persons and nonpregnant women 16 to 54 years of age who received a messenger RNA (mRNA) coronavirus disease 2019 (Covid-19) vaccine — BNT162b2 (Pfizer–BioNTech) or mRNA-1273 (Moderna) — from December 14, 2020, to February 28, 2021. The percentage of respondents was calculated among those who completed a day 1 survey.

（1）請說明本篇作者為何要開展此研究？

（2）請說明本篇的資料來源為何？並請思考和說明這些資料的取得和收集過程可能面臨哪些問題和限制，進而可能影響研究結果。

（3）依「Figure 1」所示，請說明該圖所呈現的結果為何？

（4）請問臺灣的孕婦接種 COVID-19 疫苗的現行建議和作法？

（5）若在臺灣開展探討孕婦接種 COVID-19 疫苗的安全性之研究，請問您會如何設計？

試題隨卷繳回