

2021年6月15日
資料文件

立法會人力事務委員會

工作間死亡個案與工作情況關係的研究

目的

本文件旨在報告由職業安全健康局（職安局）進行之“工作間死亡個案與工作情況關係的研究”的主要結果，以及勞工處就此的觀察。

背景

2. 跟世界任何其他地方一樣，香港有個案涉及工人並非因工作遭遇意外而在工作間突然死亡，有意見表示部分這些突然死亡個案是否由「工作過勞」而導致。「工作過勞」並非一個醫學診斷，國際勞工組織並沒有就「工作過勞」而導致工作間死亡制訂定義或指引，國際上在這方面亦沒有公認的準則，香港也沒有這方面的定義¹。儘管如此，勞工處同意進行一項研究，以進一步了解香港這類於工作間突然死亡的個案的特徵和情況。

3. 在2017年10月，勞工處委託了職安局進行這項研究，聚焦研究經呈報²在工作間因心臟及腦血管疾病（下稱心腦血管病）而非因工作意外導致的死亡個案，這類個案佔工作間突然死亡個案的大多

¹ 根據《僱員補償條例》，如僱員在受僱工作期間因工作遭遇意外而導致受傷或死亡（包括因意外引致僱員心腦血管疾病病發或突然死亡），其僱主須根據該條例負起補償的責任。

² 根據《僱員補償條例》呈報的個案。

數³。職安局於2020年完成研究的實地調查工作，並於2021年完成撰寫研究報告，勞工處已仔細研究了報告的結果。本文件簡介研究的主要結果和勞工處的觀察。

研究目的和方法

4. 作為研究的第一步，職安局就心腦血管病的相關風險因素進行了詳細的國際文獻綜述。職安局觀察到，國際研究結果一致地指出，導致心腦血管病的成因眾多，涉及不同與工作和非與工作狀況有關的風險因素。換而言之，工作和非工作因素都可以促成心腦血管病的發生及發展。與工作相關的風險因素包括工作時間、工作性質、工作環境和工作壓力等，而非工作因素主要涉及年齡增長、病史、已存在的疾病和生活方式因素，例如飲食習慣、體重、體能活動、吸煙和飲酒等。由於心腦血管病成因眾多，職安局進行研究時採用了全面性的方式，收集各種可能與工作間因心腦血管病死亡有關的工作和非工作因素的資料，藉以評估工作情況與工作間死亡個案的可能關係。

5. 勞工處一共轉介了200宗工作間因心腦血管病死亡的個案予職安局進行研究，所有個案均是由2017年9月至2019年11月呈報予勞工處的，並獲得其家屬同意而轉介至職安局⁴。

6. 就每位去世工人，職安局會收集其工作情況的資料（包括工作時間，與工作相關的身體負擔和精神壓力，以及與工作相關而導致極端心理或身體負擔的異常事件）和個人風險因素（包括年齡、性別、個人和家族病史、已存在的疾病、生活方式因素和導致心理或身體負擔的非工作異常事件）。為此，職安局聯絡死者的家屬，以及死者最後職業的僱主和熟悉同工，並使用涵蓋以上提及的所有工作和非工作因素的問卷進行訪問，他們可自願參與這個研究。就26宗個案（13%），職安局成功訪問了去世僱員的家屬，僱主代表和同工三

³ 大多數經僱主呈報非因工作意外而引致的死亡個案都是由心腦血管病導致。在2020年，有100宗此類工作間死亡個案呈報至勞工處，當中有73宗是因心腦血管病導致，其餘的則由其他疾病，例如癌症、肺炎和胃腸道出血等導致的。職安局在其文獻綜述中也觀察到，在世界不同地方，心腦血管病也是導致工作間突然死亡的主要原因。

⁴ 200宗個案分別包括在2017年（於同年的最後四個月呈報）、2018年和2019年發生的工作間心腦血管病死亡36宗、96宗和68宗。

方。除了一宗個案外⁵，職安局成功訪問了其餘個案的一或兩名目標受訪者。

7. 這項研究屬於描述性質的觀察研究，旨在收集一些可能引致這些死亡個案的因素的特徵資料。研究的設計並非為了評估工作間心腦血管病與這些可能因素之間的因果關係（如有），也不能確鑿地確定各種因素可能導致這些死亡個案的程度。要達至這些目的，需要掌握全面的醫學意見，及進行病例對照研究或隊列研究。

研究結果

8. 下文將介紹研究的主要結果和職安局的觀察。

個案概況

9. 研究個案的年齡介乎25至78歲，一半以上（56%）的個案年齡在50至64歲之間，年齡中位數為56歲。根據世界衛生組織的資料，年齡增長是心腦血管病最重要的獨立風險因素。當年齡超過55歲，中風的風險每10年便會增加一倍。研究個案的年齡中位數高於香港一般勞動人口的年齡中位數（56歲相對於43歲）。

10. 大多數的個案為男性，共181宗（90%），而女性則有19宗（10%）。多數個案來自行政及支援服務業（26%）和建造業（25%）。在職業方面，共有42名建築工人（21%）和37名保安員（18.5%），其餘來自其他不同職業，附件一中的列表顯示200宗個案的一般概況。

與工作有關的因素

11. 職安局分析了所有個案的工作和非工作特徵，並觀察到大多數個案有多種可增加引致心腦血管病機會的風險因素。與工作有關的風險因素包括長工作時間、工作壓力、輪值／夜間工作和體力負荷。非工作的風險因素包括個人病史、已存在的疾病、高齡、不健康的生活方式（即吸煙、飲酒，缺乏體能活動和不健康的飲食）。職安局認為研究結果與國際研究結果一致，即心腦血管病引致的工作間死亡個案成因眾多。

⁵ 一宗個案因僱主拒絕面談及未能提供同事資料，以及死者在香港沒有家屬而沒有進行訪問。

12. 在200宗轉介予職安局的個案中，三分之二（總數135宗）的個案未有出現／報稱任何與工作有關的因素⁶，當中包括116宗個案只出現會導致心腦血管病的個人風險因素，例如個人病史，年老，體重問題，吸煙等。其餘三分之一（總數65宗）的個案則同時出現與工作有關和非工作有關的風險因素。換而言之，沒有任何個案只涉及與工作有關的風險因素。

工作時間

13. 個案在死亡前一周的每日平均工作時間為6至12.9個小時，他們大多數每周工作5至6天，每月工作22至26天。不同行業和職業的個案的工作時間各有不同。在職業方面，保安人員個案比其他職業的個案有較長的工作時間。雖然研究個案的工作時間嚴格來說並不能與香港一般工作人口的工作時間作出比較，但職安局進行的比較分析顯示，研究中不同行業／職業的死亡個案的每周工作時間及每月平均工作時間中位數，大致與本港相同行業／職業的一般僱員的工作時間相近。

14. 如上文第二段所述，「工作過勞」並沒有醫學或國際間認可的定義。由於長工時或會被視為與「工作過勞」有關，為了在200宗轉介個案中篩選長工時個案，作這方面的深入分析，職安局參考了日本、韓國和台灣的相關指引中提及的工作時間水平⁷。以這些指引內的工作時間水平作參考，研究顯示共有44宗個案（22%）的工作時間達到可在日本、韓國和台灣被視為長工作時間的水平。在這44宗個案中，有29宗在死亡前一個月的工作時間超過276個小時（平均294個小時）。在這44個案中，有42宗個案在去世前的2至6個月內平均每月工作超過256小時。在這44名僱員中，22名是保安人員及5名是建築工人，其餘涉及各種其他的職業。

⁶ 在這 135 宗個案中，有 17 宗個案的工作時間不明。

⁷ 日本、韓國和台灣是極少數地區提供指引以評估心腦血管疾病死亡的“工作相關性”以作補償。日本、韓國和台灣的主要準則大至相同，一般而言，根據這些指引，僱員在死亡前一個月內工作超過 276 小時或在死亡前連續兩個月或以上（最多六個月）內的平均每月工作超過 256 小時，會被視為是工作時間長。這些指引都要求須整體考慮其他與工作相關的因素和個人因素，以評估死亡與工作的相關性。

15. 根據日本、韓國和台灣的指引，職安局亦整體地研究可引致這些死亡個案的非工作及個人因素。研究發現43宗個案均有以下心腦血管病的個人風險因素：

- (i) 20宗個案有長期病患（例如高血壓、高膽固醇、心臟病、糖尿病、中風病史、心肌梗塞病史等），這些都是已知構成心腦血管病的高風險因素。其中6宗個案有進行驗屍，結果顯示5宗個案的冠狀動脈均出現70-100%的阻塞，其餘1宗個案出現了心臟結構的慢性病理變化。
- (ii) 19宗個案沒有病史，但當中18宗個案的驗屍報告顯示冠狀動脈有嚴重的粥樣硬化改變⁸，而主要冠狀動脈阻塞達70-100%。其餘1宗個案的驗屍報告顯示冠狀動脈有粥樣硬化病理變化，主要動脈阻塞達40-70%，以及心臟出現了慢性病理變化。
- (iii) 其餘5宗並沒有已知病史或驗屍報告，當中3宗個案的事主身型肥胖及體能活動不足，他們的年齡分別為64、70和77歲，另外1宗個案是長期吸煙人士及有家族糖尿病史。

16. 在這44宗個案中，三分之二（總數34）的體重屬於肥胖或超重，18名是長期吸煙者（其中13名有吸煙習慣超過20年），亦有12名有飲酒習慣。這44宗個案年齡介乎32-77歲之間，平均年齡57歲，這44宗個案的一般概況見附件二。

工作壓力與工作情況

17. 在200宗個案中，有12宗個案的受訪者表示死者的工作涉及高或很高體力負荷的體力勞動。當中有7人需要在戶外進行體力勞動工作，但研究並沒有發現他們在去世前出現中暑症狀。這些個案涉及不同職業，包括保安員，建築工人，清潔工人等，當中據報的體力需求包括戶外園藝工作，體力處理操作，上落樓梯巡視，急促工作等。職安局未能確定這些體力消耗是否達至直接引發心腦血管病的水平，因為有關評估需要臨床醫學意見。上述個案並不涉及突發工作事件，或死亡前24小時內工作負荷或工作量出現重大變化，而導致身體的過度負擔或負荷。

⁸ 動脈粥樣硬化的病變和動脈狹窄是一個緩慢的病理過程，需要長時間才能形成。

18. 在200宗個案中，有27宗個案的受訪者表示死者面對重大的工作壓力，包括日常工作的精神壓力和／或在臨近病發前面對壓力情況。就日常工作的精神壓力，主要涉及人手短缺，工作繁重，壓力大的工作性質等，當中7宗個案屬於上文第14-16段所介紹的個案，就其餘20宗個案，死者去世前一個月的平均工作時間為189小時。這27宗個案據報均沒有涉及事發前出現突然增加身體負擔或超負荷的情況。

非關工作的因素

病史

19. 大多數個案（104宗）報稱有已知的慢性疾病病史，例如高血壓（62宗），糖尿病（26宗），心臟病（25宗），腦血管意外／中風（7宗）和高膽固醇（5宗），這些病史都會增加心腦血管病的風險，亦是廣為記載的心腦血管病風險因素。在這104宗個案中，有15宗沒有任何醫療跟進，因而有可能增加健康惡化的風險，這15宗個案大部份是吸煙者、身型肥胖及缺乏體能活動。在這15宗個案中，9宗有驗屍報告，報告顯示冠狀動脈出現40-100%阻塞的情況。在這104宗個案中，共有33宗沒有資料顯示相關僱員有否接受治療。

20. 在其餘96宗個案中，25宗的病史不明及71宗沒有任何病史，其中65宗個案有驗屍報告，當中62宗的驗屍報告顯示，死者出現動脈粥樣硬化病變及其主要冠狀動脈出現達40-100%的阻塞，和／或心臟增大等病變，包括左心室有增厚及擴大，這些情況都增加了心腦血管病的風險，但這些個案均報稱沒有病史或病史不明（因而沒有任何醫療跟進），由於這些個案缺乏任何醫療跟進，因此增加了他們心腦血管病促發的風險。

21. 值得注意的是，根據《死因裁判官條例》，並非所有需要向死因裁判官報告的死亡個案都需要進行驗屍。死因裁判官會根據病理學家對死者的外體格檢查，包括是否可以確定其死亡原因，進行評估。換句話說，一般而言，如個案無需驗屍也能確定死因，則沒有必要進行驗屍。由於一些研究個案沒有驗屍報告，職安局無法評估這些死者的身體是否已出現可引致心腦血管病病發及發展的病理變化。在200宗研究個案中，有122宗個案進行了驗屍，結果顯示99宗個案出現了嚴重的動脈粥樣硬化病變並造成及高達70-100%的阻塞，以及7宗個案出現了動脈粥樣硬化病變並造成40-70%的阻塞。

生活方式因素

22. 研究結果發現，在有提供相關資料的個案當中，大多數缺乏體能活動，有吸煙習慣（一半以上為長期吸煙者），及有體重問題。就體重而言，根據亞洲人體重指標（BMI）標準，高百份比（77%）的個案沒有健康的體重，就有提供相關資料的179宗個案中，屬肥胖（BMI \geq 25）的有107宗，31宗屬超重（BMI \geq 23至 $<$ 25）。研究個案的肥胖比率（54%）遠高於香港普遍人口的肥胖比率（21%）。52%的研究個案有吸煙習慣，而香港普遍人口中有吸煙習慣的只佔11%。相當多的研究已指出吸煙是引致心腦血管疾病的主要原因，因為吸煙會促使血栓於狹窄血管內形成的風險，令這些血管的動脈粥樣硬化程度增加。根據世界衛生組織的資料，10%的心腦血管病個案是與吸煙有關。這些結果反映不健康的生活方式加上高體重指標會令人更容易患上心腦血管病，這與一般的醫學觀察一致。

個人與家庭因素

23. 有24宗個案的受訪者表示死者在去世前6個月內遇到非工作的壓力問題，當中約一半個案因個人或家庭事宜承受著很大的壓力，例如要照顧生病或年老的家人、經濟困難、婚姻問題等。

研究結論

24. 根據職安局的觀察，研究結果顯示個案的心腦血管病的發展是由多種風險因素引起，沒有單一因素是造成這些工作間心腦血管病死亡個案的唯一原因，這些觀察與相關的國際研究結果一致。職安局亦觀察到，沒有任何個案只涉及與工作相關的風險因素。事實上，135宗個案並沒有涉及任何與工作有關的因素。因此，職安局的結論認為在研究個案中未能普遍發現與工作相關的風險因素。

25. 職安局的報告摘要見於附件三（只有英文）。

勞工處的觀察

26. 正如國際研究結果所得，我們認同職安局的觀察，認為心腦血管病的成因眾多並涉及與工作狀況和非與工作狀況相關的風險因素，是次研究的結果亦與此國際看法一致。

27. 心腦血管病已成為全球人口死亡主因，佔2016年全球所有死亡個案的31%。心腦血管病在香港人口亦十分常見，多年來是香港人口的主要死亡原因。在2019年，約1,500名年齡15-65歲的香港市民因心腦血管病而死亡。以30歲至64歲（共7個各5年的年齡組別）的香港人口的心腦血管病死亡率作比較，2019年香港工作人口在工作間因心腦血管病死亡的比率，遠低於香港一般人口在相同年齡組別的比率，詳情見附件四。這兩個死亡率的巨大差異似乎說明，在工作人口中因心腦血管病引致工作間死亡的風險遠低於在一般人口中因心腦血管病造成的死亡風險。這個觀察亦與職安局的研究結果一致，即在研究個案中未能普遍發現與工作相關的風險因素。

28. 值得注意的是，研究個案的年齡中位數為56歲，而香港一般僱員的年齡中位數為43歲。這個情況與其他研究普遍認為較年長人士一般有較高的心腦血管疾病風險的觀點一致。

29. 就工作時間而言，「工作過勞」普遍被視為與長時間的工作有關連。勞工處留意到是次研究結果並有未顯示個案的工作時間與同一行業或職業的僱員的工作時間有著顯著差異。勞工處亦注意到，44宗在是次研究被歸類為長工時的個案，全都有涉及個人風險因素，這些因素增加了（很多個案涉及顯著的程度）促發心腦血管病的風險，當中39宗個案有相關的病史和已存在的疾病，導致身體出現了慢性病理變化，因此他們的心腦血管病很大程度可能歸因於其潛在病理變化的自然發展。但是，值得注意的是，這研究的設計並非為了確鑿地確立或排除這些個案與其工作因素的關聯程度。其餘大多數個案都與高齡和／或生活方式因素有關，例如長期吸煙、體重過重和缺乏體能活動，這些都是眾所周知能引發心腦血管病的原因。

30. 研究顯示，在200宗個案中有37名是保安人員。保安人員在工作間因心腦血管疾病死亡的人數中所佔的比例較高，在2016-2020年，保安人員佔工作間因心腦血管病死亡的人數的16%至20%，而且他們一半以上的年齡均在60歲或以上。高齡本身是公認但不能改變的心腦血管病風險因素。這37名保安人員的平均年齡為62歲，而其餘163宗其他職業個案的平均年齡為55歲。這37名保安人員中有17名各有不同的潛在病史，例如血壓高，糖尿病，心臟病，中風，多囊性腎病等。另外17宗有驗屍報告的個案，大部分發現有70-100%的冠狀動脈被動脈粥樣斑塊阻塞，其餘3宗個案均為肥胖且缺乏體能活動，而其中2人的年齡為70歲或以上。在這37宗個案中，有25宗屬超重／肥胖、15宗有吸煙歷史及7宗有飲酒習慣，他們大多數的體能活動不足。

31. 我們還注意到，在200宗研究個案中，42名是建築工人，他們的平均年齡為54歲。事實上，在過去幾年，相當數目的工作間心腦血管病死亡個案均涉及建築工人，在2017-2020年，工作間心腦血管病死亡人數中有15-21%屬建築工人。男性是比較容易患上心腦血管病，而長期吸煙則是另一個已知的心腦血管病的風險因素。在研究中涵蓋的42名建築工人，所有均為男性，其中29人為長期吸煙者（其中16人吸煙超過20年）。在這42宗個案中，22宗有潛在病史，例如高血壓、糖尿病及心臟病，但其中11宗並沒有任何醫學跟進。至於其餘20宗個案，有18宗的驗屍報告指出死者已有70-100%的冠狀動脈被動脈粥樣斑塊阻塞。至於超重／肥胖／體重不足的個案則共有27宗。

32. 研究結果顯示，在有提供相關資料的個案中，根據亞洲體重指標標準，77%的個案出現體重問題（107宗個案屬肥胖，31宗個案屬超重）。大部份這些個案均缺乏體能活動，而他們的飲食習慣亦不健康。這些生活方式以及高體重指標會增加個人患上心腦血管病的風險。此外，80宗個案分別有慢性疾病（例如高血壓，糖尿病，心臟病等）的病史但沒有接受醫學跟進，或其心血管系統已出現長期病理變化的情況而不自知。值得注意的是，就47宗沒有個人病史的個案，它們事實上全部都出現了冠狀動脈阻塞，其中44宗個案出現嚴重的血管阻塞。這些結果帶出以下有效控制心腦血管病的重要元素：

- (一) 須認知預防心腦血管病的相關風險因素；
- (二) 奉行健康的生活方式以預防及管理心腦血管病；及
- (三) 進行定期身體檢查，以找出是否患有任何慢性心血管病，從而可以及早診斷和安排及時治療。

33. 根據上述研究結果，勞工處會加強力度，在工作環境向僱主和僱員推廣對心腦血管病相關的風險因素的認知，以及適當管理和介入的重要性。工作間被公認為教育和幫助員工管理健康的理想環境。我們會利用由勞工處、職安局和衛生署合辦的“好心情@健康工作間”計劃的平台來推動這個措施。

34. “好心情@健康工作間”計劃於2018年推出，透過舉行一系列活動，讓僱主及僱員一同攜手創造健康及愉快的工作環境，例如內部工作坊、實體和網上研討會、為個別機構度身的諮詢服務、借用健康檢查儀器套裝等。到目前為止，已有2,000多個機構（僱用大約60萬名僱員）參加了這個計劃之下的推廣活動。

35. 在成功推出“好心情@健康工作間”計劃的基礎上，勞工處會透過這計劃提倡工作間生理及心理健康和及早發現與心腦血管病相關之風險因素的重要性，從而及時採取適當措施。這項提升措施首先會針對保安人員和建築工人這兩種佔本研究個案約40%的職業。除僱員外，這措施亦會在機構層面以僱主為對象，目的是將工作間健康計劃納入機構健康文化的一部分。為了令計劃得到最佳的成效，計劃細節會考慮到這些職業的性質和特點，以及僱主和僱員的需要，包括服務內容及訊息的設計及它們的傳達及提供方式。職安局之下將會成立一個高層次的工作小組推行這個措施，成員將包括勞工處、衛生署及主要的僱主和僱員持份者（例如香港物業管理公司協會和香港建造商會）。建議的措施與政府促進基層醫療服務以預防和及早發現慢性疾病（包括心腦血管病）的工作是一致的。透過這項措施，我們會找出個案以轉介到地區康健中心或醫院管理局的普通科門診診所作跟進。

徵詢意見

36. 請委員備悉職安局的研究結果和勞工處的觀察。

勞工及福利局

勞工處

2021年6月

200 宗個案的詳細資料

表 1.1 年齡

年齡	心血管疾病		腦血管疾病		全部	
	個案數目	百份比	個案數目	百份比	總數	百份比
<30	0	0.0%	1	2.4%	1	0.5%
30-34	2	1.3%	1	2.4%	3	1.5%
35-39	6	3.8%	1	2.4%	7	3.5%
40-44	12	7.6%	8	19.0%	20	10.0%
45-49	14	8.9%	9	21.4%	23	11.5%
50-54	31	19.6%	7	16.7%	38	19.0%
55-59	40	25.3%	8	19.0%	48	24.0%
60-64	23	14.6%	3	7.1%	26	13.0%
65-69	18	11.4%	2	4.8%	20	10.0%
70+	12	7.6%	2	4.8%	14	7.0%
總數	158	100.0%	42	100.0%	200	100.0%

表 1.2 行業

工業	個案數目	百份比
行政及支援服務活動	52	26.0%
建造	50	25.0%
住宿及膳食服務活動	23	11.5%
運輸、倉庫、郵政及速遞服務	21	10.5%
進出口貿易、批發及零售	18	9.0%
製造	11	5.5%
專業、科學及技術活動	6	3.0%
人類保健及社會工作活動	5	2.5%
政府部門	4	2.0%
教育	3	1.5%
資訊及通訊	2	1.0%
家庭住戶內部工作活動	2	1.0%
農業、林業和漁業	1	0.5%
地產活動	1	0.5%
其他服務活動	1	0.5%
總數	200	100.0%

表 1.3 職業

職業	個案數目	百份比
建築工人	42	21.0%
保安員	37	18.5%
司機	22	11.0%
餐飲業員工	15	7.5%
清潔工	12	6.0%
經理	12	6.0%
倉務/裝貨/送貨工人	11	5.5%
主管	9	4.5%
專業人員	7	3.5%
銷售員	4	2.0%
行政管理人員	4	2.0%
技術員	4	2.0%
操作員	4	2.0%
客戶服務人員	3	1.5%
雜工	3	1.5%
園藝工人	3	1.5%
保健員	2	1.0%
家庭僱工	2	1.0%
其他	4	2.0%
總數	200	100%

表 1.4 去世前一個月的工作時數

工作時數	個案數目	百份比
< 176	34	18.6%
176-200	36	19.7%
>200-225	40	21.9%
>225-250	24	13.1%
>250-276	20	10.9%
>276	29	15.8%
總數	183*	100%

*有 17 宗個案的工作時間未有提供

表 1.5 去世前連續兩個月或以上（最多六個月）內平均每月最高工作時間

連續兩個月或以上（最多六個月）內 平均每月最高工作時間	個案數目	註解	
		個案數目	月份的數目以計算 平均每月的工作時間
256	42	1	去世前 1-2 個月
		1	去世前 1-3 個月
		40	去世前 1-6 個月
256 或以下	138		
總數	180*		

* 有 20 個個案未有提供相關資料

44 宗個案的詳細資料

表 2.1 年齡

年齡	心血管疾病		腦血管疾病		全部	
	個案數目	百份比	個案數目	百份比	總數	百份比
<45	5	12.8%	0	0.0%	5	11.4%
45-49	1	2.6%	1	20.0%	2	4.5%
50-54	9	23.1%	2	40.0%	11	25.0%
55-59	11	28.2%	0	0.0%	11	25.0%
60-64	5	12.8%	0	0.0%	5	11.4%
65-69	3	7.7%	0	0.0%	3	6.8%
70+	5	12.8%	2	40.0%	7	15.9%
總數	39	100.0%	5	100.0%	44	100.0%

表 2.2 行業

工業	個案數目	百份比
行政及支援服務活動	26	59.1%
建造	5	11.4%
住宿及膳食服務活動	4	9.1%
運輸、倉庫、郵政及速遞服務	4	9.1%
製造	2	4.5%
專業、科學及技術活動	1	2.3%
資訊及通訊	1	2.3%
政府部門	1	2.3%
總數	44	100.0%

表 2.3 職業

職業	個案數目	百份比
保安員	22	50%
建築工人	5	11.4%
餐飲業員工	4	9.1%
清潔工	2	4.5%
客戶服務人員	2	4.5%
經理	2	4.5%
助理船長	1	2.3%
起重機操作員	1	2.3%
司機	1	2.3%
園藝工人	1	2.3%
機械技術工	1	2.3%
主管	1	2.3%
倉務工人	1	2.3%
總數	44	100%

表 2.4 去世前一個月的工作時數

工作時數	個案數目	百份比
= 或 <276 小時	15	22.7%
>276 - <280 小時	1	2.3%
280 - <290 小時	17	38.6%
290 - <300 小時	3	6.8%
300 - <310 小時	1	2.3%
310 - <320 小時	5	11.4%
322 小時	1	2.3%
330 小時	1	2.3%
總數	44	100.0%

表 2.5 去世前連續兩個月或以上（最多六個月）內平均每月最高工作時間

連續兩個月或以上（最多六個月）內 平均每月最高工作時間	個案數目	百份比
246	1	2.3%
255	1	2.3%
260 - <270	11	25.0%
270 - <280	14	31.8%
280 - <290	8	18.2%
290 - <300	2	4.5%
300 - <310	4	9.1%
310 - <320	1	2.3%
320 - 322	2	4.5%
總數	44	100.0%

Executive Summary

1. Background of the Study

The Occupational Safety and Health Council (OSHC) was commissioned by the Labour Department (LD) to conduct a consultancy study on the possible relationship between work conditions and notified workplace deaths not arising from work-related accidents. Cases of workplace death were referred to OSHC by the LD for study and analysis. Workplace deaths not caused by work accidents are mainly deaths due to cerebro-cardiovascular diseases (CCVDs). However, it is unknown to what extent work factors might have contributed to these CCVD death cases. The aim of this study is to collect information on factors that might be relevant to workplace deaths due to CCVDs so as to assess possible relationship between different work conditions and these death cases.

The International Labour Organization (ILO) does not include work-related CCVDs in the list of occupational diseases and the CCVDs due to overexertion are generally not compensable as occupational disease in most of the foreign countries. That said, Japan, South Korea and Taiwan are among the few exceptions, where relevant guidelines have been developed for the assessment and recognition of work-relatedness of CCVDs for employee compensation purpose. We have reviewed the recognition criteria among these regions and noticed that the Taiwan guideline (TWGL) (also known as 職業促發腦血管及心臟疾病 (外傷導致者除外) 之認定參考指引) is a useful reference for evaluation of CCVD cases. The holistic approach for assessment of the CCVDs cases based on the TWGL was therefore adopted in this study.

2. Methodology

As this is the first study of its kind in Hong Kong, a comprehensive literature review on (1) global trend and mortality of CCVDs; and (2) risk factors (both work and non-work related) associated with CCVDs was conducted. Then, main part of the study involves interviews with relevant parties (including immediate family members, employers/employer representatives and co-workers who worked closely with deceased employees) to collect information on work conditions and lifestyle of the deceased employees and analysis of the data so collected. With reference to the TWGL, two sets of questionnaire, both similar in structure, were designed for use in the study. The questionnaire covers: (1) basic information of interviewee, (2) work conditions of the deceased employee (which include working hours, changes in work content, stress levels at normal daily work, stressful incident close to the onset of CCVD death, working environment, etc.), and (3) non work-related factors of the deceased employee (which include personal and family medical history, lifestyle and stressful life events, etc.).

A total of 200 CCVD death cases notified to LD by employers were referred to OSHC. Interviews were conducted on all but one case, with a completion rate of 99.5%. The one case where no interviews could be conducted was due to that no close family member was in Hong Kong, and the employer declined to be interviewed on ground of lack of time and did not provide contacts of co-workers for follow up.

A total of 359 individual interviews were conducted. Family members accounted for 139 of these interviews; 178 interviews were completed with the employers or employer

representatives, and 42 were with co-workers of the deceased. The lowest response rate obtained from co-workers could partly be attributed to work-alone job nature of the deceased, employers' reluctance to refer co-workers for interviews, or lacking close contacts with the deceased employees. For the latter part of the study, the COVID-19 pandemic had made this research study more challenging and tremendously slowed down the study schedule.

Whenever possible, response inconsistencies among different groups were checked. When such inconsistencies were detected, an evidence-based approach (i.e. Evidential Reasoning) was adopted so that more representative and trustworthy data could be compiled for analysis.

3. Literature Review

3.1 Global and Local Situation of CCVDs

CCVDs have become the leading cause of death across the globe. According to World Health Organization (WHO), an estimated 17.9 million people died of CCVDs in 2016, accounting for 31% of all deaths globally. Between the years 2000 to 2016, over 80% of CCVD deaths were due to ischemic heart disease (IHD) (51.6%) and stroke (33.9%). CCVDs are also prevalent among the Hong Kong general population and are one of the leading causes of death. Number of deaths due to heart and cerebrovascular diseases were 6,088 (age-standardized death rate per 100,000 population: 33.8) and 3,016 (age-standardized death rate: 16.6) respectively in 2018.

Consistent research findings suggest that causes of CCVD diseases are multifactorial, with various risk factors related to both work and non-work related factors in the development of CCVD risk.

3.2 Work-related Risk Factors

The association between long working hours and increased risk of cardiovascular diseases has long been addressed. Recent publications from WHO and International Labour Organisation (ILO) jointly estimated the work-related burden of disease and injury suggested that exposure to long working hours may have led to increased risk of ischaemic heart disease incidence and mortality as well as stroke incidence. Yet, some researchers doubt that those findings may be more applicable to low socioeconomic status occupations and more researches are required to verify harmfulness as well as to determine clinical relevance.

Besides working hours, work stress is another work-related risk factor that has drawn substantial amount of attention to its impact on CCVD risk. A combination of high work demands and low job control at work would be regarded as job strain and it is commonly known as one of the stressful components of the psychosocial work environment. In general, research findings seem to converge to the conclusion of a positive association between work stress and CCVDs, such that people who have high job strain normally have higher risk of CCVD than those with low job strain.

Studies showed that physically demanding and exhaustive activities during work as well as exposure to different substandard work environments such as workplace noise, hazardous chemicals, and extreme temperature may also increase the risk of CCVDs in the workplace.

3.3 Non-work Related Factors

Looking into research on the association between non-work related factors and CCVDs, consistent findings have shown that unhealthy diet, physical inactivity, tobacco use and harmful use of alcohol (i.e. a pattern of over consumption or addictive use of alcohol that is causing damage to health either physically or mentally) are the most important behavioral risk factors contributing to heart disease and stroke.

Other non-work related factors such as sleep duration, body weight and pre-existing medical conditions are also reported to be associated with CCVD risks. For instance, it is found that those sleeping less than 5 hours per day was associated with an elevated risk of CCVDs as compared with those sleeping 7 hours per day, with the relative risk ranging from 1.05 to 1.57. As for body weight, not only overweight and obesity are of particular concern, people who are underweight are also found to be associated with increased risk of CCVDs. In addition, people who have pre-existing medical condition such as hypercholesterolemia, diabetes and hypertension are found to be associated with higher risk of CCVDs.

3.4 Interrelationships between Work and Non-work Related Factors

WHO/ILO issued a paper (Descatha et al., 2020) and postulated that the impact of exposure to long working hours on IHD or stroke is far from simple. Both work and non-work related factors could possibly contribute to the onset of CCVD diseases, and individuals who have multiple risk factors are expected to be more susceptible to develop such diseases. Hence, a holistic approach should be adopted to identify the relationships between various work and non-work related factors and the development of CCVD disease by comprehensively examining, but not limited to, lifestyle, state of worker's health, extent of pre-existing disease, workload and work conditions.

4. Findings of the Study

4.1 Age, Gender and Occupation Distributions of the Deceased Employees

Age of the deceased employees ranged between 25 to 78 years old, with an average age of 55. More than half of them were between 50 and 64 (56.0%). Among all the deceased employees under the current study, average age of frontline security guards was higher than that of other occupations. Eleven (5.5%) deceased were less than 40 years old. There were 19 (9.5%) females and the rest were males (90.5%). Most of the deceased were from administrative and support service activities¹ (26.0%) and construction industry (25.0%), followed by accommodation and food service activities (11.5%), transportation, storage, postal and courier services (10.5%), import/export, wholesale and retail trades (9.0%), and the rest from other industries (including manufacturing, professional, scientific and technical activities, etc.). In terms of occupation, most of the deceased were construction workers (21.0%) and frontline security guards (18.5%), followed by drivers (11.0%), catering staff (7.5%) and cleaners (6.0%), etc.

¹ It covers workers from property management or security services, cleaning services, landscape care and greenery services, and management of human resources functions in this study.

4.2 General Findings on Work-Related and Non-Work Related Factors

The work and non-work characteristics of the deceased were analyzed. Majority of the deceased had multiple risk factors which could lead to an increased chance of developing CCVDs. The work-related factors included long working hours, work stress, business trip, shift/night work and physical overload. Non-work related risk factors included personal medical history, family medical history, advanced age, unhealthy lifestyle (tobacco and alcohol use, physical inactivity, and unhealthy diet).

Most of the deceased (197 cases) had at least one risk factor (including work-related and/or non-work related risk factors), except 3 cases (1.5%). The 3 exceptions were all female employees, including a part-time saleswoman (age 25), a domestic helper (age 39) and a clerk (age 55). Based on information gathered, two of them were not associated with any work or non-work related risk factors, whereas the remaining one case did not have personal risk factors and her working hours were unknown.

There were 116 deceased employees (58.0%) who had risk factors only related to personal medical history, family medical history or unhealthy lifestyles. In other words, no work-related risk factors were observed for 58.0% of CCVD death cases in this study. Besides, 16 deceased (8.0%) had personal risk factors, but their working hours were unknown. Discounting the 3 exceptions, the remaining 65 deceased employees (32.5%) were found to have both work-related risk factors and non-work related factors. None of the deceased was found to solely have work-related risk factors. The study results are consistent with the international research findings that workplace deaths caused by CCVDs are multi-factorial. The findings are summarized in the following sections.

4.2.1 Findings related to work-related factors

4.2.1.1 Working hours

The average daily working hours of the deceased ranged from 6 to 12.9 hours in the week prior to death. Most of them worked 5 to 6 days per week and 22 to 26 days per month. Working hours varied across different industries and occupations. Deceased employees working in administrative and support service activities (including frontline security guards, cleaners and gardeners) had the longest working hours within 6 months before death as compared to that of the other deceased employees. In terms of occupations, deceased employees who were frontline security guards worked longer hours than those of other occupations. Catering staff came second, followed by cleaners, drivers, etc.

With reference to the TWGL, 44 deceased employees (24.0% of 183 cases²) met the criteria for working long hours. Among them, 42 deceased (23.3 % of the 180 cases³) with known working

² *The 183 cases cover all those cases where working hours for the immediate preceding month and/or preceding 6 months where known.*

³ *Three cases, where only working hours for the immediate preceding month were known, were taken out.*

hours for the preceding 6 months) had worked more than 256 hours on average per month during any of the 2 to 6 months period before the onset of CCVD death, and 29 of the deceased (15.8% of the 183 cases) had worked more than 276 hours in the month prior to death. Among these 44 workers, 22 were frontline security guards, 5 were construction workers and 4 were catering staff. The rest were cleaners, customer service staff, managers, operators and driver, etc. The 44 workers were between 32-77 years old with an average of 57 years. Twenty of them had known history of chronic medical illness (such as hypertension, heart disease or high cholesterol, etc.). Although the remaining 24 cases were being reported as having no/unknown history of chronic medical illness, the autopsy reports showed that 18 out of these 24 employees (75.0%) had severe atherosclerotic change with 70% to 100% occlusion of major coronary arteries and 1 deceased (4.2%) had atherosclerotic change with 40-70% occlusion of major coronary arteries and chronic pathological change of the heart. The remaining 5 deceased did not have autopsy reports and had either no or unknown history of chronic medical illness but they all had various personal risk factors for CCVDs.

For these 44 cases who met the long working time criteria, 34 (77.3%) were obese or overweight, 18 (40.9%) were chronic smokers and 12 (27.3%) had drinking habits.

4.2.1.2 Work conditions

Twenty-seven deceased employees (13.6% out of 199) were reported to have significant work stress. Among them, some were being reported to endure heavy workload as the main stressor due to insufficient manpower. Some of the deceased experienced other stressors such as handling important projects, safety issues arising from work, mental stress caused by previous work injuries, complaints from clients, highly disciplined work, company financial problems and rushing to meet work deadlines. Among the 199 cases, 12 (6.0%) of them were shift workers who worked 2-3 different time slots alternately, and with one of them experienced a high degree of work stress. Another 11 (5.5%) cases were required to go for business trips in mainland China, Singapore, Australia, etc. and two of them were reported to be suffering from excessive work pressure. The noise levels in the deceased's workplaces were generally regarded as normal.

Thirty-three deceased employees were required to work outdoor and perform manual handling operations (with various degrees of physical demand). However, symptoms of heat stroke during work duty were not observed. On the other hand, 12 of the deceased employees (6%) were required to perform manual work where physical demands were deemed as high to extremely high which might have exceeded the workers' physical capacity limits as reported by the interviewees. Their physical overloads were reported to be mainly related to outdoor work, manual handling operation, inspection/patrol, shortage of manpower or fast work pace, etc.

4.2.2 Findings related to non-work related factors

Personal and family medical history, BMI, sleep conditions, family and interpersonal relationships, financial issues and lifestyles were studied in this study. Not all respondents were able to provide information about each of the factors mentioned.

4.2.2.1 Personal medical history

Medical history of 25 deceased employees (12.5%) were unknown (including the one where no interviews were conducted) and 71 (35.5%) were being reported by their family as having no history of medical illness. The majority of cases, 104 (52.0%) in total, were being reported to have known history of chronic medical diseases such as hypertension (62 cases, 59.6% of 104), diabetes (26 cases, 25.0% of 104), heart disease (25 cases, 24.0% of 104), cerebrovascular accident/stroke (7 cases, 6.7% of 104) and high cholesterol (5 cases, 4.8% of 104). All these medical conditions could have increased the risk of CCVD deaths. Among these 104 cases (52%), 15 of them (14.4% of 104) had no medical follow-ups, which could lead to increased risk of health deterioration. For the remaining 96 cases (48.0%) where there was no known medical history, 65 were with autopsy reports. Among them, 95.4% (i.e. 62 cases) showed an atherosclerotic change with up to 40-100% occlusion of major coronary arteries, enlarged heart with left ventricular hypertrophy and dilation- all of which increased the risk of sudden death.

The study also found that deceased employees who were being reported by family members as having no history of medical illness had already developed chronic pathological changes of cardiovascular system. Hence, it is of paramount importance for individuals with risk factors for CCVDs, even if asymptomatic, to have early medical checkups for health monitoring (risk factor reduction) and appropriate medical treatment.

4.2.2.2 Lifestyle and other personal factors

Regarding eating habit, diet of 35.0% of the deceased with known eating habit (48 out of 137 cases) tended to be high in sodium or sugar, or heavy on meat and less on vegetables. About 96% (131 out of 137) of the deceased had less than 5 servings of vegetables and fruit a day.

As for physical activities, it is reported that 75.2% of the cases (121 out of 161 cases) have no regular physical activities. Only 5 deceased (3.1%) had sufficient level of physical activities as per recommendation of WHO.

When bodyweight was considered, an alarmingly high percentage of the deceased did not have a healthy weight according to the Asian BMI criteria. 107 of them were obese (Body Mass Index (BMI) ≥ 25) and 31 were overweight (BMI ≥ 23), accounting for 77.1% of the 179 deceased where bodyweight and height were provided. These findings are in line with general medical observations that unhealthy lifestyle coupled with high BMIs would make an individual more prone to CCVDs.

Eleven deceased employees (5.6% out 196 cases) were reported to experience high stressful life events within 6 months before death. These stressful events include taking care of sick elderly or mentally disabled family members, preparing for daughter's marriage, indebtedness and worries about finances, experiencing family members/relatives passing away, or dealing with marital problems and domestic violence, etc.

4.3 Further Observations from the Study

The project team noticed the median working hours of the deceased engaged in estate management, security and cleaning services were apparently longer than that of workers in the same industries (66 hours vs. 50.2 hours per week). However, it should be noted that working hours between the samples in this study and that of employees from the general population in Hong Kong as provided by the Census and Statistics Department (C&SD) were not strictly comparable. Apart from the non-random sampling nature of this study and the small sample size, the issue of occupation, gender and age have not been taken into account. In fact, the project team noted that the higher proportion of frontline security guards in our “non-random sample” as compared with the distribution of occupations in C&SD’s database for the estate management, security and cleaning services industrial group could be the main reason for the difference in the working hours mentioned above. When comparing the daily average working hours for frontline security guards and cleaners in our study vs their counterparts in the general population, we found that the two were similar, where actual figures were 10.4 vs 10 hours and 8.5 vs 8 hours respectively.

It is also observed that median age of the deceased in this study was higher than that of the city’s general employees (56 years old vs. 43 years old). A higher proportion of the deceased was found to have smoking habits and was obese or overweight as compared with the general population. The results echoed with conclusions from studies that old age, tobacco use and obesity as traditional risk factors of CCVDs.

Overall, findings from this study points to the direction that *multiple risk factors* are in play in the development of CCVDs. No single factor could be pinpointed as solely responsible for work-related CCVDs. Eleven out of the 199 deceased in the study had multiple work-related risk factors (long working hours, stressful work events or shift work, etc.), but they also had non-work related risk factors at the same time. None of them was found to have work-related risk factors alone. Results revealed that 116 deceased employees (58.0%) in this study did not have any work-related factors. The study findings are consistent with our literature review that CCVD is a multifactorial disease with various risk factors related to work and non-work related factors. The information collected from the current study was not sufficient to determine the effects of work factors and non-work related factors on CCVDs. To achieve this would require comprehensive medical input and adopting an analytic approach such as case control or cohort studies, which are beyond the scope of this study.

5. Limitations of the Study

This study is a descriptive research where no control group was included. The investigations into any causal relationships between workplace CCVD deaths and work conditions require more complex research design and sampling strategy, such as case control study. Hence this study was not able to determine any causal relationship between workplace CCVD death and different conditions.

Moreover, accuracy of data obtained from the interviews depends on interviewees’ subjective memories, gut feelings, judgments, as well as their familiarity with the deceased. These are further complicated by the time lags between the death incidents and interviews, and other

uncertainties (especially with working time and overtime hours). Hence data collected from the interviews could only be a rough proxy of the real picture. In addition, CCVD death cases in this study were mainly cases reported in the workplace; death cases outside the workplace were not covered, rendering this set of data not being strictly comprehensive, and hence not comparable to employees in the general working population. As a result, this study was mainly to give a descriptive report of the characteristics of the CCVD deaths in the workplace. Nevertheless, being the first study of its kind in Hong Kong, the study provides important reference for future studies on the effect of work conditions on CCVD deaths.

6. Conclusion and Recommendations

This study aims to identify the characteristics of CCVD deaths in workplaces including working hours, work nature, work environment, stressors at work, medical history and lifestyle, etc. Major findings of the study are summarized below.

Apart from work-related risk factors, individual factors, such as personal medical history and unhealthy lifestyle may also increase the risk of CCVD deaths. Among the deceased, majority of them (116 out of 200 cases) had risk factors solely related to individual factors. While 32.5% (65 out of 200 cases) of the deceased employees had work-related risk factors, they also had non-work related risk factors. 104 cases (52.0%) had pre-existing conditions such as heart disease, hypertension, diabetes and high cholesterol, which would lead to the progression of CCVDs. Among deceased employees whose autopsy reports were available, even for 65 cases who were being reported as not having any personal medical history or their medical history was unknown in the survey, most of them (more than 90%) had moderate to severe atherosclerotic change with occlusion of major coronary arteries. These findings emphasized the importance of having regular physical examinations in order to understand personal health conditions, so that early diagnosis and timely treatment could be made possible.

It can be concluded that more than half of the CCVD deaths in this study were not involved in any work-related risk factors. In addition, none of the cases investigated was found to have only work-related risk factor without individual risk factors. In other words, work-related risk factors were not prevalently identifiable among the deceased.

In fact, we did not find any particular difference in personal risk factors (medical history, unhealthy lifestyle, BMI, etc.) among those with long or short working hours. The findings showed that multiple factors were involved in the development of workplace CCVDs, including work-related and non-work related ones. On the positive side, most of the risk factors can be controlled by making lifestyle changes (such as quit smoking, reduce alcohol use, incorporate physical activities into daily routines, healthy diet, and maintain healthy weight) and work management (such as managing workload and work stress). This forms the basis of mitigating CCVD deaths at workplaces and some recommendations are suggested below.

Having regard to the deceased employees' characteristics, the project team recommends that promotions of workplace health should be strengthened, and health awareness of employees should be enhanced. Such measures could include implementing workplace health programme and integrating it as part of the organizational health culture, such as setting annual organizational objectives for health promotion and making health promotion programmes

(including activities such as healthy eating, physical activity promotions, meditation, health check-up subsidies, etc.) available to employees. The provision of health guidance should be considered for employees who have higher risks for developing CCVDs and where their occupations demand irregular/long working hours and involve high physical demand from labour work. Moreover, employers are encouraged to subsidize health checks, especially for employees who met the criteria of high BMI and having personal and family medical history.

All in all, to effectively reduce risks of workplace deaths due to CCVDs, employers and employees should work together to develop good health management in the workplace as well as outside the workplace.

Lastly, this study also reviewed different work-related CCVD recognition guidelines (Japanese, Korean and Taiwan). The TWGL is found to be a useful reference for evaluating CCVD cases. According the TWGL, work-related and non-work related factors are assessed in a holistic manner. Working hour plays an important role in evaluating the workload and work stress of deceased, but individual factors such as lifestyles, personal medical history are also important factors.

(I) 在 2019 年 30 歲及以上(按不同年齡組別)因心腦血管病而死亡的登記數字

年齡組別	30-34	35-39	40-44	45-49	50-54	55-59	60-64	≥ 65
因心臟病而死亡的登記數字	15	24	49	109	189	255	393	5 032
因腦血管疾病而死亡的登記數字	9	13	28	58	89	119	159	2 488
因心臟病及腦血管疾病而死亡的登記數字 (a)	24	37	77	167	278	374	552	7 520
香港人口 (b)*	557 100	611 200	566 600	582 200	579 900	647 900	574 800	1 322 000
(a) / (b) x 100%	0.43 x 10⁻² %	0.61 x 10⁻² %	1.36 x 10⁻² %	2.87 x 10⁻² %	4.79 x 10⁻² %	5.77 x 10⁻² %	9.60 x 10⁻² %	56.88 x 10⁻² %

* 香港在 2019 年的年中人口

(II) 2019 年度 30 歲或以上(按不同年齡組別)在工作間因心腦血管病死亡的數字

年齡組別	30-34	35-39	40-44	45-49	50-54	55-59	60-64	≥ 65
數字^ (c)	2	1	8	16	14	27	13	18
僱員人數 (d)	445 600	475 900	423 500	415 900	390 200	373 400	222 400	120 300
(c) / (d) x 100%	0.04 x 10⁻² %	0.02 x 10⁻² %	0.19 x 10⁻² %	0.38 x 10⁻² %	0.36 x 10⁻² %	0.72 x 10⁻² %	0.58 x 10⁻² %	1.50 x 10⁻² %

^ 2019 年度在工作間因心腦血管病死亡的數字屬臨時性質