Charles Sturt University

Evaluation of the NSW Ambulance Body-Worn Camera Trial

2023

Regional Work and Organisational Resilience Research Group

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Acknowledgements

Charles Sturt University acknowledges all First Nations elders, both past and present, from the lands where CSU students and staff reside. In particular, CSU acknowledges the Wiradjuri, Ngunawal, Gundungarra and Biripai peoples of Australia, who are the traditional custodians of the land where the University's campuses are located. CSU also acknowledges the many First Nations peoples who are the traditional custodians of the lands in which NSW Ambulance operates.

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We also thank the broader community for their valuable contribution to the stakeholder survey that involved participants beyond NSW Ambulance.

The data within this report draw on the unique perspectives of NSW Ambulance and the broader community. All quoted data seeks to reflect participant opinions accurately. All data has been deidentified to ensure confidentiality.

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Executive Summary

This report evaluates the implementation and impact of the NSWA Pilot BWC Trial by the RWOR research group at CSU.

Little is currently understood about the potential or actual impact of BWCs on the work performed by frontline emergency service workers. There has been limited research regarding the impact of BWCs on rates of occupational violence (OV) among paramedic populations. OV is defined as "any incident in which someone is abused, threatened or assaulted in circumstances relating to their work" (Safe Work NSW, 2024, para. 1).

The objectives of this project are to:

1. Provide a rapid review and a national and international environmental scan on the use of BWCs among paramedics and other frontline responders (completed in October 2022 and attached as Appendix 1);
2. Evaluate the impact of body-worn cameras on OV and workplace health and safety;
3. Evaluate paramedics' psychological perceptions of the impact of BWCs on their work, including labour processes and affective relationships with patients;
4. Provide an ROI and CBA analysis, including workers' compensation costs; and
5. Provide stakeholder perceptions of the implementation of BWCs.

The project drew on quantitative and qualitative analysis, including three surveys of frontline workers, in-depth interviews with frontline workers and key informants, a survey of stakeholders from the public, and, where appropriate, an analysis of statistical data collected by NSWA on the costs and benefits associated with the introduction of BWCs.

Key findings

A substantial majority of participants, 59%, had an overall positive perception of BWCs, 13% had an overall negative perception, while over a quarter (28%) were neutral, suggesting these respondents are either undecided or see the advantages and disadvantages as balanced.

Occupational violence and workplace health and safety

OV against paramedics occurs at a relatively high rate and is increasing for paramedic services in Australia (Thynne & Rodwell, 2018).

Frontline staff and key informants identify that OV is a significant factor that impacts young and inexperienced workers, contributing to higher turnover and burnout in the early years of a career.

It is possible that the reporting of OV may remain lower than the actual incidence, given that much of the violence experienced is normalised as ‘just part of the job’. There are signs of cultural change that encourage increased reporting of OV to gain a stronger idea of the scope and range of incidents.

Overall, frontline paramedics are ambivalent about whether BWCs will reduce OV, with 46% of respondents believing BWCs will reduce OV, 32% not believing that BWCs will reduce OV, and 22% remaining neutral. Qualitative data supported these figures, with participants identifying that BWCs may contribute to both escalation and de-escalation of OV incidents. There was also recognition that sometimes a neutral or low-risk situation could escalate unexpectedly and quickly, and staff need stronger skills in dynamic risk assessment, situational analysis, and conflict management.

Participants strongly identified that BWCs alone will not solve increasing OV but need to be seen as part of a suite of activities, including risk management and de-escalation training, to address paramedic workplace safety.

Furthermore, participants emphasised that BWCs should not be considered a single solution for burnout or emotional exhaustion. A range of factors contribute to burnout and emotional exhaustion, and while increasing OV may be a significant contributor, it cannot be seen as the primary catalyst. BWCs must be seen as one element in a broader strategy to address paramedic wellbeing.

Just over half of the respondents (51%) felt safer wearing a BWC, 20% expressed a neutral view, whereas 29% did not feel safer.

Just under half of the frontline staff (49%) believe that BWCs will have a positive impact on physical harm of paramedics, 8% believe the impact will be negative, while 43% were unsure. Similarly, 39% of staff believe that BWCs will have a positive impact on the mental and emotional harm of paramedics, 9% believe the impact will be negative, while 52% are unsure of the impact of BWC on mental and emotional harm.

Staff perceptions of BWCs

Some staff identified that while it is important to recognise paramedics’ professional autonomy and ability to decide whether to use a BWC, compulsory use may address problems associated with decision fatigue, muscle memory, and increased cognitive load that occurred when the use of BWCs was optional.

Paramedics described the need to normalise a low threshold for activation, or in other words, create a culture where paramedics are comfortable to activate the cameras when an unclear,

seemingly minor threat may be evident, particularly in cases where dynamic changes in risk may occur.

Overall, paramedics were undecided as to whether BWCs may impact their relationships with patients and members of the public, with 50% neither positive nor negative, 30% positive, and 20% negative.

Paramedics frequently positioned their role and functions in contrast with those of the police, particularly when using BWCs.

Various technical and practical challenges to the use of BWCs were identified by paramedics, including:

- BWCs interacting with uniforms in various ways
- Battery life and ongoing use of BWCs
- The increased labour of educating the public about the use of BWCs
- Recording processes
- Docking/charging/uploading issues
- Access to recordings and footage
- Sufficient administration time to complete the reporting and uploading processes

These technical elements may need to be addressed before any future implementation process.

Organisational challenges surrounding implementation

A potential obstacle to the BWCs awareness program is some distrust in the organisation (organisational culture) and a lack of support from some frontline management (personal culture) to drive the adoption of BWCs. Both organisational and personal cultures are related to team management and vary across stations.

Participants reported some confusion about the purpose of BWCs and who may have access to the video footage.

They identified mixed messages about using BWCs for training or performance management. This raised questions about using BWC footage in legal cases or formal complaints.

During the trial period, no footage was used as evidence in internal complaints or in Australian Health Practitioner Regulation Agency (AHPRA) or Health Care Complaints Commission (HCCC) requests. BWC footage has been used in a small number of criminal prosecutions in relation to violence against paramedics had has resulted in the prompt prosecution of all perpetrators.

While training processes improved between the first and second phase of trial implementation, participants identified a range of ways in which training could be improved for a broader roll-out, most notably through the integration of BWCs with training in situational awareness, risk management, conflict resolution, de-escalation training, and by recognising the needs of different cohorts for tailored training.

In any future service-wide implementation program, it will be important to have consistent messaging about the purpose of BWCs. This could be achieved through mandatory training and regular updates. NSWA should also consider mandatory usage of cameras to ensure consistent procedures and reporting in relation to OV incidents across all stations and locations.

Return on investment

Findings from quantitative analysis conducted in this study demonstrated that body-worn cameras have the potential for mitigating occupational risk, evidenced by the lower occurrences of occupational violence for stations that employed BWCs.

A cost-benefit analysis conducted using multiple evaluation criteria further suggests evidence of a net economic benefit to society. However, the viability of the BWC project is highly sensitive to the underlying model assumptions used to estimate the project's economic benefits.

External perceptions

An overwhelming majority of the external survey respondents had a positive or very positive (88%) attitude towards paramedics using BWCs, with only 5% having a negative or very negative attitude and 7% neutral.

External stakeholders see BWCs as a helpful tool to protect paramedic frontline workers against OV. When asked, "Under what circumstances do you feel it would be appropriate for paramedics to record interactions using BWCs?" the respondents overwhelmingly endorsed recording all nine listed OV incidences at the mid to high 90% level.

There is a perceived risk of potential unintended consequences around patient-clinician interaction, which can be managed through narratives, communication, and educating the public about NSWA's requirements and the benefits of using BWCs.

Recommendations

BWCs must be seen as just one element in a range of strategies to address OV towards paramedics.

BWCs must be seen as just one element in various strategies to address burnout and emotional exhaustion among paramedics.

NSWA needs to encourage a culture of change that supports consistent reporting of OV incidents across stations. This must be communicated consistently from all levels of management across the organisation.

A future BWC program needs to acknowledge that there is a spectrum of experienced OV, and staff need support to identify a low-threshold level of OV that should trigger the activation of BWCs.

Staff training in BWC use should be tailored to the needs of particular cohorts, recognising the skills and autonomy of experienced staff and sharing their knowledge with less experienced staff.

BWC training needs to be embedded in broader OV management training that includes situational awareness, risk management strategies, conflict management and de-escalation strategies. Training should also address muscle memory and practical training.

Excessive cognitive load, decision fatigue, and the related psychological strain could be minimised by mandating the use of BWCs by all staff. However, developing a roll-out strategy with clear communication and training support will be important to minimise the impact on team dynamics and patient relations.

The range of technical and practical challenges to using BWCs should be addressed before any large-scale roll-out and in the contract specifications for the supply of future BWCs.

NSWA should explore options for BWCs to be a standard item included in ambulance equipment, with information collation linked to ambulance identifiers rather than individual officers. This may require reviewing legislative provisions surrounding individual recording processes and privacy.

A broader roll-out to all stations should also be supported with a communication strategy aimed at stakeholders in the public to raise awareness of why BWCs are necessary. This could be combined with existing communication strategies designed to remind the public that paramedics deserve their respect and support and are there to support the community.

The use of high-quality data is critical to gain an accurate insight into the benefits of the BWC program, and thus, it would be desirable for NSWA to collect more data over a longer period to allow for a more comprehensive study.

This report does not consider intangible costs such as fatigue, stress, and burnout. The exclusion of these costs may underestimate the actual costs or benefits of the BWCs program, which raises opportunities for further research into these areas.

NSWA could work with other government agencies to identify potential economies of scale and cost savings related to BWC technology.

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Glossary

Ahpra	Australian Health Practitioner Regulation Agency
AV	Ambulance Victoria
BWC	Body-Worn Camera
CSU	Charles Sturt University
ECG	Electrocardiograms
FLW	Frontline Workers
HCCC	Health Care Complaints Commission
NSW	New South Wales
NSWA	NSW Ambulance
NSWPF	NSW Police Force
OV	Occupational Violence
PCA	Principal Component Analysis
ROI	Return on Investment
RWOR	Regional Work and Organisational Resilience
WHS	Workplace Health and Safety

1. Introduction

The Body-Worn Camera (BWC) Project is a pilot program that was initiated to reduce occupational violence (OV) and workplace health and safety (WHS) incidents for NSW Ambulance Service paramedics and support ongoing responses arising from these incidents. The initial pilot program began in 2019 across three locations, Sydney Ambulance Centre in Eveleigh, Liverpool Superstation, and Hamilton. It was based on using 60 cameras across all three sites and the experiences of several hundred paramedics. However, the initial project's outcomes were heavily impacted by the COVID-19 pandemic in 2020 and 2021, and it was considered necessary to undertake a second phase beginning in December 2022 to evaluate the effectiveness of BWC in an environment less impacted by such extraordinary circumstances. The second phase saw the implementation of BWCs across three additional stations – Northmead Superstation, Artarmon Superstation, and Wagga Wagga.

In 2022, the Regional Work and Organisational Resilience (RWOR) research group at Charles Sturt University (CSU) began a comprehensive review of the NSW Ambulance (NSWA) Body-Worn Camera (BWC) Implementation Project. This evaluation included a rapid review and environment scan, an assessment of the impact on WHS with a particular focus on the impact on OV, a return on Investment (ROI) analysis, an evaluation of the impacts of BWC on work processes and patients, and finally, an assessment of the impact on staff and stakeholder wellbeing and perceptions of the BWC initiative.

The reporting of OV incidents against NSW Ambulance (NSWA) paramedics is increasing. A rise in internal reporting of assaults against paramedics can be attributed to several NSWA initiatives, including the introduction of mandatory anti-violence training in 2014 and the ongoing participation by employees in wellbeing workshops. While each of these initiatives has tended to encourage the reporting of incidents of OV, it is believed OV is still under-reported by paramedics in NSW.

Nationally and internationally, the increase in the number of physical assaults upon paramedics directly correlates to an upsurge in the number of paramedics having to seek medical attention as a result. Not only are incidents of physical violence escalating, but the severity of violence encountered by staff is also increasing. These cases significantly impact the mental, emotional, and physical wellbeing of staff and stakeholders (Maguire et al., 2018).

Eighty occupational violence prevention recommendations arose from the following three reports:

- NSW Ambulance Occupational Violence Prevention Strategic Advisory Group report (released November 2016)

- The Parliamentary Inquiry into Violence against Emergency Services Personnel report (released August 2017)
- Round-table meeting report (released February 2018).

The BWC Project aims to assist in the implementation of the following recommendations arising from the reports:

- A review to explore current and potential communication devices used by paramedics to further strengthen personal security for all employees.
- A review to identify contributing factors and behaviours that place paramedic staff at risk to enable the improvement of support and management processes for employees.

The BWC Project follows on from previous and current trials being conducted by Ambulance Victoria (AV), the NSW Police Force (NSWPF), the NSW Department of Primary Industries, as well as some NSW Local Government Agencies, such as council parking Enforcement Officers.

This report evaluates the implementation and impact of the NSWA BWC Project by the RWOR research group at CSU.

1.1. Setting the scene

OV is defined as "any incident in which someone is abused, threatened or assaulted in circumstances relating to their work" (Safe Work NSW, 2024, para. 1). It is important to note that OV does not have to result in injury and can include intimidation, objects thrown, physical assault, property damage, road rage, sexual assault, sexual harassment, spitting, and verbal abuse (Boyle et al., 2007).

A BWC is a small transportable device, usually worn on the outside of clothing, glasses, or headwear, to produce video and audio recordings (Wilson et al., 2022). Most of the research relates to the use of BWCs by police personnel. However, the market for BWCs is growing rapidly worldwide. It is mostly law enforcement agencies and private security companies that need BWCs, but increasingly, this technology is finding wider application across industries. In addition to retail, where BWCs are becoming more common, the cameras are also used in healthcare, public transport, and a range of other public service functions (Paige, 2021). Depending on the technology, BWCs can be integrated into existing CCTV systems.

Little is currently understood about the potential or actual impact of BWCs on the work performed by frontline emergency service workers. There has been limited research regarding the impact of BWCs on rates of OV among paramedic populations. Most of the literature relates to the use of

BWCs by police and is focused on public safety (e.g., reducing incidents of excessive force by officers, and increasing police accountability).

The RWOR CSU team prepared a literature review and current research into using BWCs. In the review, no studies were found that addressed the key research question. However, the team found that BWCs have been used by other frontline emergency service workers, and a mixed body of literature has emerged in relation to their use by police, parking officers, transportation workers, and mental health nurses. A parallel line of enquiry explored the use of closed-circuit television (CCTV) and protective service officers in the health and retail sectors.

There are fundamental differences in the rationale for using BWCs by police and paramedics, and in the environmental constraints experienced by frontline workers (FLW) in hospitals and retail settings compared to those of paramedics in the field. Therefore, the results of the studies that have investigated the effect of surveillance or protective action on OV for these various FLWs do not inform the critical question of the effect of BWCs on OV for paramedics. This project aims to address this gap in the literature by investigating the impact of BWCs when worn by paramedics.

The prevalence and severity of OV against healthcare workers are increasing (Maguire, 2018; Maguire et al., 2018). Previous Australian pilot data suggests that almost 90% of paramedics have been exposed to OV during their careers (Boyle et al., 2007). Within 12 months, it is estimated that 69% of paramedics experience at least one form of OV (Gormley et al., 2016). The immediate and subsequent long-term impact on both the physical and mental health of the victim, have direct and indirect financial and personal costs to an organisation through time off work, compensation, and medical management, and increased work-related psychological distress and decreased staff morale (Griffiths et al., 2015).

The OV against ambulance workers predominantly includes physical assaults and verbal abuse. In NSW, BWCs are the latest initiative to keep the workforce safe from OV and protect NSWA staff (NSW Ambulance, 2022). While OV is still widely under-reported by paramedics, the reporting of OV incidents against paramedics is increasing as staff become sensitised through mandatory anti-violence training and participation in wellbeing workshops (NSW Ambulance, 2022).

This report understands WHS broadly to include workers' physical, mental, and emotional wellbeing, and in particular, work-related wellbeing as "the overall quality of an employee's experience and functioning at work" (Hamberg-van Reenen et al., 2012). Research is increasingly providing evidence of the links between wellbeing and work performance. For example, Wright and Cropanzano (2000) found that psychological wellbeing was positively correlated with job performance, and therefore suggested that organisations should invest in their employees' psychological wellbeing to achieve optimal performance and productivity.

1.2. Objectives

A process of co-design between NSWA and the CSU RWOR research group identified five key objectives for this evaluation research project, which were:

1. Rapid review and a national and international environmental scan on the use of body-worn cameras among paramedics and other frontline responders (completed in October 2022 and attached as Appendix 1);
2. Evaluating the impact of body-worn cameras on occupational violence and workplace health and safety;
3. Return on investment analysis, including workers' compensation costs;
4. Evaluation of paramedics' psychological perceptions of the impact of body-worn cameras on their work, including labour processes and affective relationships with patients;
5. Stakeholder perceptions of the implementation of body-worn cameras.

1.3. Our methods

For this research project, we used several different methodologies. We started with a rapid review of the extant literature (Appendix 1) and subsequently applied a quantitative and qualitative methodological approach. While the quantitative methodology comprised several surveys, the qualitative approach encompassed in-depth interviews.

1.3.1. Surveys

NSWA PARAMEDIC FRONTLINE WORKER SURVEYS

Three online surveys, covering three phases of the trial, were used and implemented through the Qualtrics platform. The three phases were intended to examine the pre-, during-, and post-pilot periods of the NSWA BWC trial. The three survey questionnaires were co-designed based on consultations with the NSWA. The surveys specifically examined paramedic frontline workers' views on using BWCs, patient incivility, experienced OV, workplace and personal wellbeing, and work safety. Additionally, demographic data were collected. On request by NSWA, the second and third surveys were shortened to obtain more responses. Besides removing and adding new survey questions, we used Principal Component Analysis (PCA) to reduce more extended questions by keeping the main intent of these questions.

The survey links were provided to NSWA, who communicated the link to the nine stations, including three phase one pilot sites (Sydney Ambulance Centre, Liverpool Superstation, and Hamilton), three phase two pilot sites (Northmead Superstation, Artarmon Superstation, and Wagga Wagga) and three control sites (Blacktown Superstation, Ryde, and Albury) encouraging staff to participate and complete the surveys.

Participation was voluntary and anonymous, and the survey could be stopped at any time before submission. Using the Qualtrics online survey platform allowed the participants to individually complete the weblink-based questionnaire from anywhere (e.g., in the ambulance) with an internet connection and at any time (e.g., during shifts) using electronic devices such as PCs, laptops, tablets, or mobile phones.

The details of the three surveys are illustrated in Table 1 below. There were different types of questions: simple selection, fixed response Likert scales, and free text responses.

The quantitative data was analysed using established protocols within IBM SPSS (version 29) and utilised descriptive and cross-tabulation methods.

Table 1: Details of the three NSWA paramedic frontline worker surveys

Survey phase/round	Survey period	Responses obtained
1	6 November 2022 to 5 June 2023	66
2	5 June 2023 to 5 November 2023	90
3	5 November 2023 to 17 December 2023	33

STAKEHOLDER SURVEY

An online cross-sectional survey was used and implemented through the Qualtrics platform. The survey questionnaire was co-designed based on consultations with the NSWA. This approach resulted in the creation of multiple customised items, culminating with the creation of a distinct and tailored questionnaire in terms of the use of BWCs viewed by the broader community and other stakeholders, including union representatives, paramedic management/leadership, paramedic frontline workers, and family members or friend with links to paramedics.

A link to the online survey was distributed using a range of virtual and real-world channels such as media releases, social media, the Australian and New Zealand Academy of Management network, the CSU Alumni network, printed postcards (300 exemplars) with a QR code and shortened URL, and CSU's School of Business network. The survey focused on different perspectives on the use of BWCs by paramedics. Additionally, demographic data were collected.

Participation was voluntary and anonymous, and the survey could be stopped at any time before submission. Using the Qualtrics online survey platform allowed the participants to individually complete the weblink-based questionnaire from anywhere with an internet connection and at any time using various electronic devices, such as PCs, laptops, tablets or mobile phones.

The survey was available for completion between 29 September and 10 December 2023 and attracted 2,179 responses. The questions comprised different types, such as simple selection, fixed response Likert scales, and free text responses.

The quantitative data was analysed using established protocols within IBM SPSS (version 29) and utilised descriptive and cross-tabulation methods.

1.3.2. Interviews

Interview participants were recruited via email to all staff located at the participating stations, inviting them to contact the research team to schedule an interview. Potential participants were provided with a link to a website that allowed them to review the profile of each of the researchers and request a time and date for an interview. Staff were permitted to undertake the interview during paid work hours and paramedic staff could choose times when rostering enabled them to be at a desk or computer. During site visits, staff were encouraged to undertake the interviews at the beginning of their roster before any call outs were registered. Care was taken to monitor the responses centrally to ensure that the sample was representative across all the trial locations. The sample included frontline paramedics and specialist frontline paramedics, and their direct station-based managers, as well as the key informants. The final sample consisted of 30 interview participants, the details of whom are listed in Sub-section 1.5.2.

The semi-structured interviews were based on an interview guide but also allowed participants to discuss and explore a range of factors beyond the outlines of the guide. Twenty-two interviews were conducted online via Teams or Zoom, five took place face-to-face during site visits conducted by three researchers, and three interviews were completed by allowing the participants to provide written responses to the key questions. Interview data collection lasted from July to December 2023.

The recordings were transcribed by a high-quality external professional transcription service. To align with ethical standards and ensure anonymity, we separated the audio from the video file and provided the transcription service with the audio file only.

The interview transcripts were analysed using NVivo 12 (QSR International). Four researchers coded the scripts collaboratively according to King and Brooks' (2017) thematic template analysis. The thematic analysis allowed a priori themes to be supported by emerging themes based on the experiential data provided by the participants. The use of NVivo software facilitated the analysis, interpretation and reporting of the data.

Finally, the qualitative findings were compared and triangulated against the relevant quantitative results with the broader research team. This process ensures the trustworthiness and robustness of the outcomes.

During the trial period, senior staff in WHS roles received direct and anecdotal feedback from frontline workers about their experience of using BWCs and their practical operation. This feedback was collated and tabulated by staff in an Excel spreadsheet that was integrated into the qualitative analysis.

1.3.3. Return on Investment and cost benefit analysis

The cost-benefit analysis is a data-driven economic assessment approach that allows the appraiser to evaluate the BWC project with minimal biases. It is an evidence-based evaluation approach that uses key input parameters and predetermined project evaluation criteria. It aims to assess the economic welfare to the whole society. Further details are presented in Section 4.

1.4. Ethics approval

As per standard research protocol, the Charles Sturt research team was required to obtain relevant ethics approval from the Human Research Ethics Committees (HREC) for this project – the protocol approval number is H22366. It is the responsibility of the Charles Sturt research team to complete the final report and, once the project is complete, to notify the HREC in accordance with national ethical standards.

1.5. Overview of participants

1.5.1. Survey participants

As outlined in Section 1.3.1, three surveys over three different periods were conducted to investigate paramedic frontline workers' experiences of BWCs. A stakeholder survey was also carried out, including the general community and respondents with personal or professional links to NSWA. The following demographical data provides a descriptive overview of the participants.

NSWA PARAMEDIC FRONTLINE WORKER SURVEYS

Overall, about two-thirds of the participants were male, and one-third were female, which is different from the Australian Health Practitioner Regulation Agency's annual report 2022/23 and the NSWA data which state that the gender distribution of the registered paramedics is 49% female and 51% male (Ahpra, 2023) and 48% female and 52% male (NSWA) respectively. Gender participation varies across the three surveys, with the second round being the closest to the overall

distribution and the third round depicting the most prominent difference, with four-fifths male and one-fifth female respondents (Figure 1).

Figure 1: Gender distribution

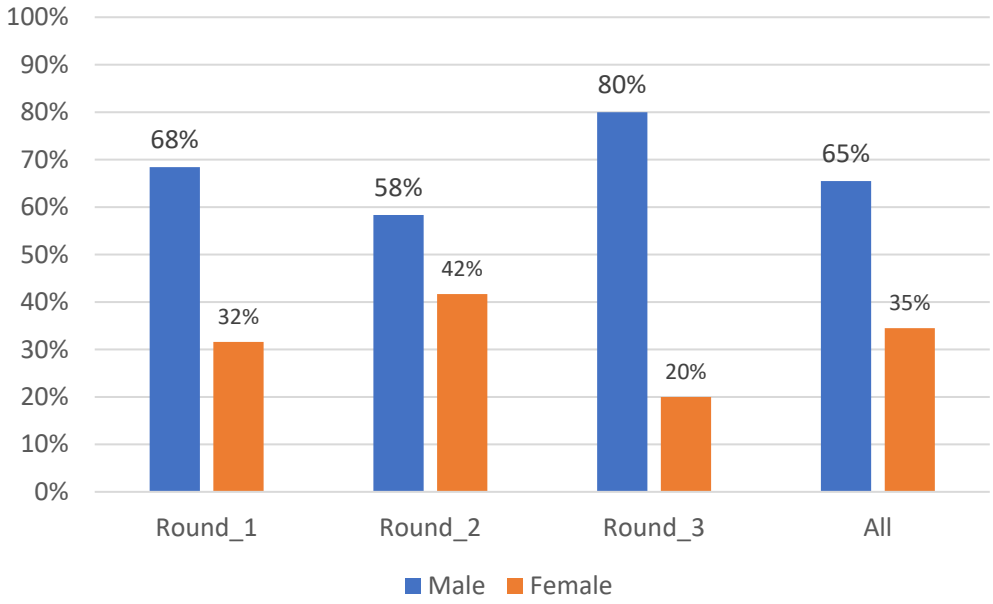
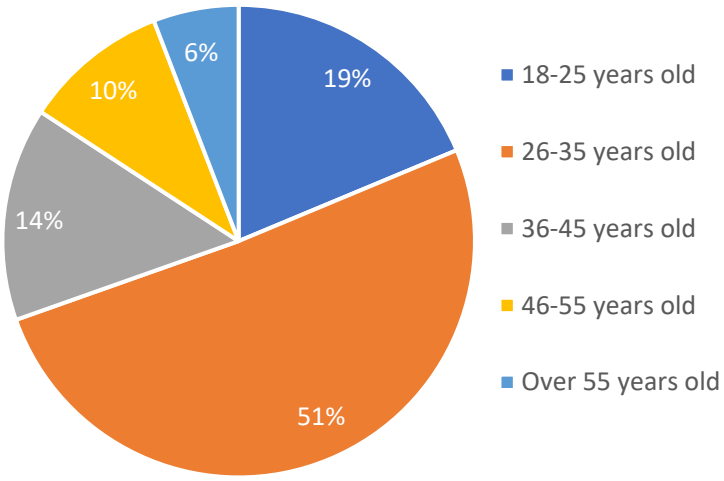


Figure 2: Age group (across all 3 rounds)



The majority (51%) of the participants were aged between 26 and 35, which mirrors the Ahpra data 2022/23, stating that the registered paramedics in Australia aged 25–34 years is the largest group with about 40% (Ahpra, 2023).

Figure 3: Work location (across all 3 rounds)

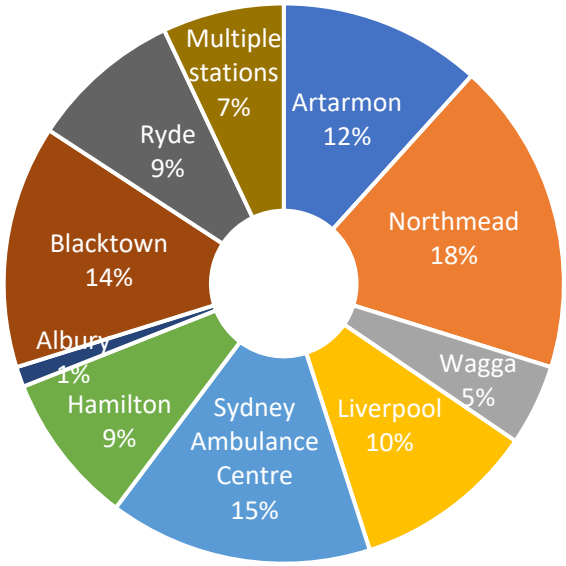
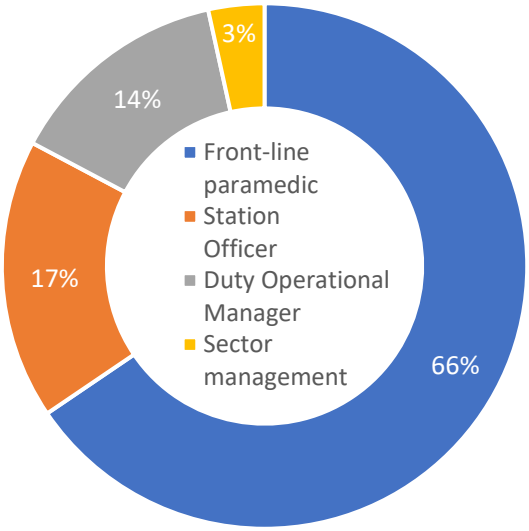


Figure 3 illustrates the six sites across NSW where the BWC were trialled — phase one sites: Sydney Ambulance Centre, Liverpool, and Hamilton; phase two sites: Northmead, Artarmon, Wagga Wagga; and non-camera control sites: Albury, Blacktown, and Ryde.

The percentages encompass the shares across all three survey phases/rounds.

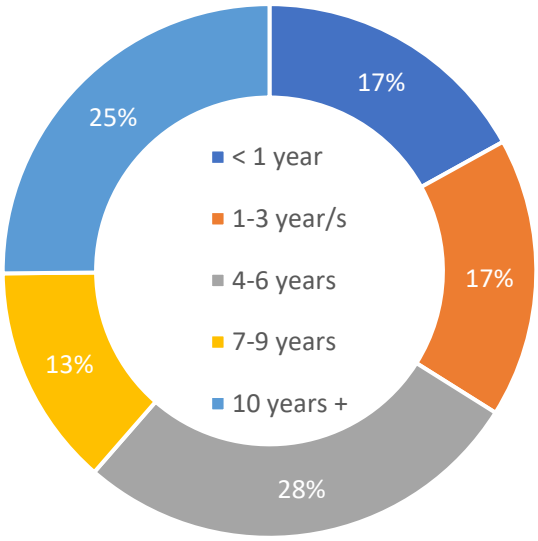
The top three stations taking part the most across all three rounds were Northmead, Sydney Ambulance Centre, and Blacktown.

Figure 4: Work location (all 3 rounds)



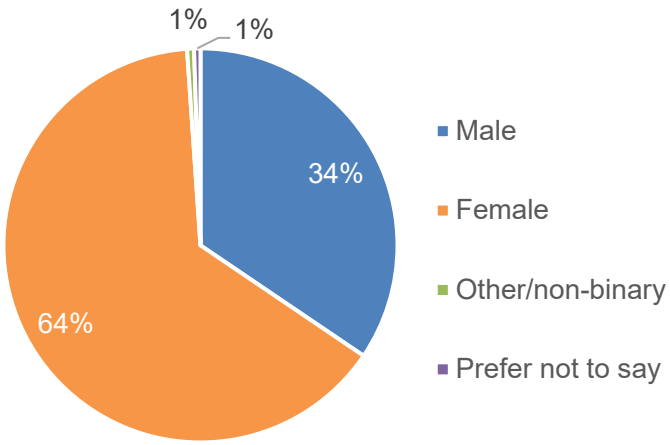
Focusing the survey on frontline paramedics, the demographical data confirms the somewhat expected distribution of the participants, with two-thirds being frontline staff (Figure 4).

Figure 5: Years of service (all 3 rounds)



One-quarter of the respondents were very experienced, with ten or more years of service. While the group with 4–6 years of service is the largest, overall, the age groups are spread relatively evenly (Figure 5).

Figure 6: Gender distribution



In contrast to the frontline paramedic survey, the respondents of the stakeholder survey are almost two-thirds female and one-third male (Figure 6).

This implies that females expressed a higher interest in paramedics using body-worn cameras at this point in time and using this survey.

Almost two-thirds (64%) of the respondents were part of the general community, and over one-third (36%) had personal or professional links to NSWA (Figure 7). Half of these, 36%, identified as family members or friends, and 43% as paramedic frontline workers (Figure 8).

Figure 7 Stakeholder position

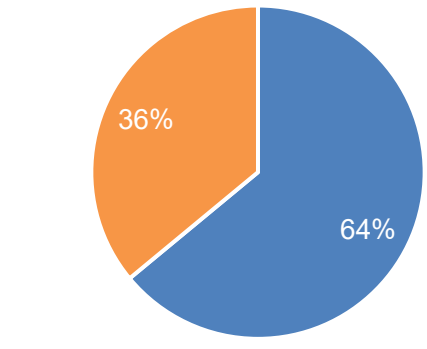


Figure 8: Stakeholder position with personal/ professional link to Ambulance services

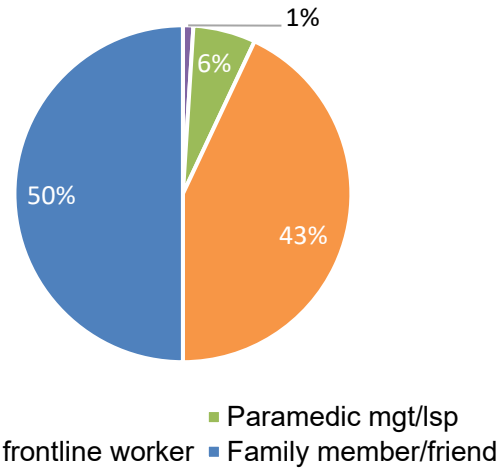
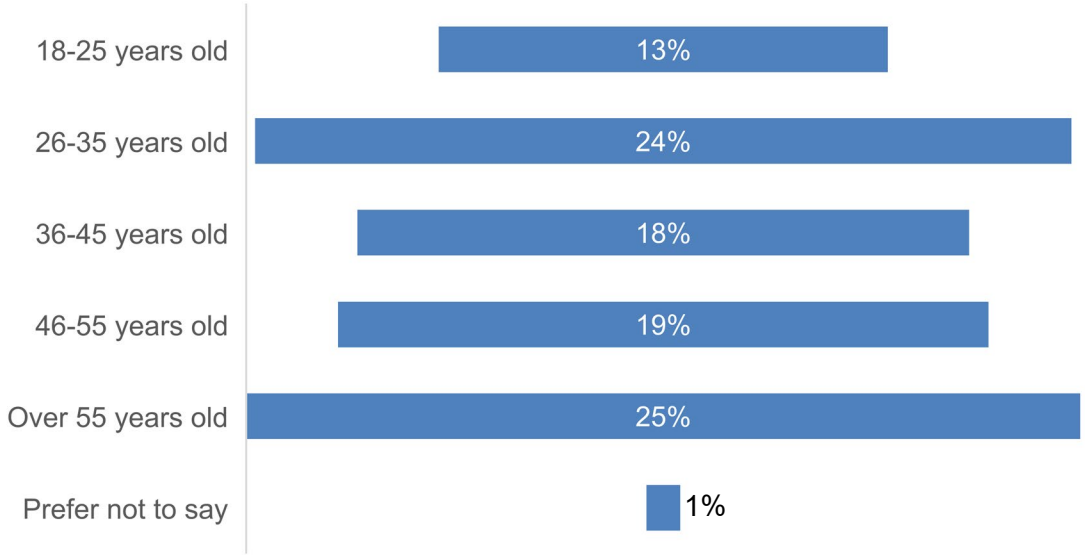


Figure 9: Age groups



The age groups show a good spread across the stakeholder cohort, with the younger generation (26–35 years) and the older age group (>55 years) consisting of about a quarter each (Figure 9).

Considering the level of education, the stakeholders were predominantly well-educated, with almost two-thirds having a diploma/advanced diploma or higher, with a bachelor's degree (25%) being cited the most (Figure 10).

Figure 10: Highest level of education

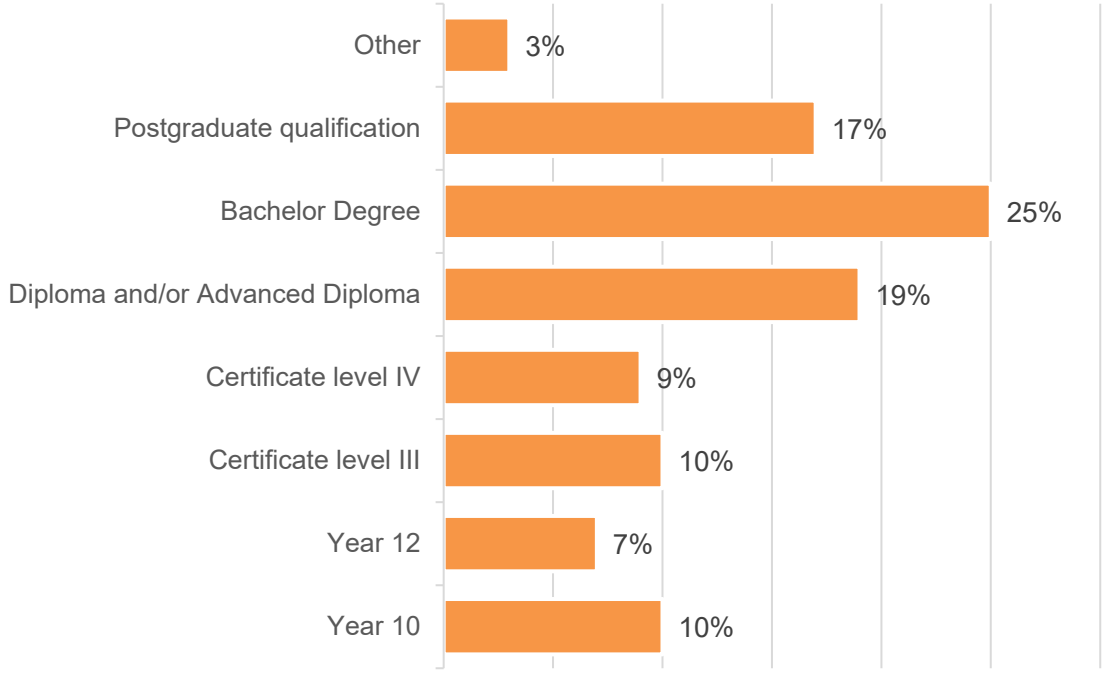
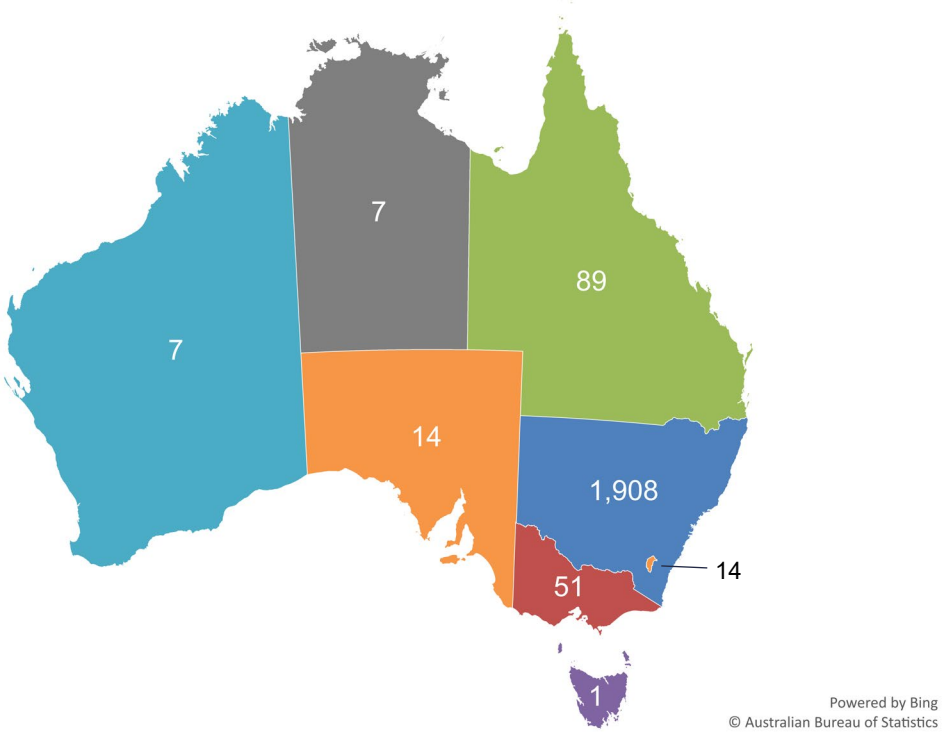


Figure 11: Location of stakeholder



The geographical demographics show the Australian states where the participants completed the survey. Not surprisingly, given that this survey was conducted with a focus on NSWA, the vast majority of the respondents completed the survey from NSW (1908), followed by Queensland (89), and Victoria (51) (Figure 11). Notably, 18 respondents from overseas completed the survey, including New Zealand, the UK, and the USA.

1.5.2. Interview participants

The interview sample consisted of participants from the Phase 1 (2019) and Phase 2 (2023) trial locations and included:

- Eleven frontline paramedics, and
- Four specialist frontline paramedics (e.g., Intensive Care Paramedic; Extended Care Paramedic), and
- Seven of their direct station-based managers (e.g., DOM; Station Officer), and
- Eight key informants (e.g., internal senior and executive staff; a member of an external body responsible for overseeing paramedic WHS claims).

Note the control locations were not included in the interview process to limit the participants to those with direct knowledge and experience of the NSWA trial process. The final participants are listed in Table 2.

Table 2: Details of the 30 interview participants

Interview Code Name	Role	Working with NSWA	**Phase 1 (2019):** Sydney, Liverpool, Hamilton **Phase 2 (2023):** Northmead, Wagga, Artarmon
INT_1	Frontline paramedic	1–5 years	Phase 2 trial participant
INT_2	Station-based manager	<1 year	Phase 2 trial participant
INT_3	Frontline paramedic	<1 year	Phase 2 trial participant
INT_4	Frontline paramedic	unknown	Phase 1 trial participant
INT_5	Frontline paramedic	20+ years	Phase 1 trial participant
INT_6	Frontline paramedic	20+ years	Phase 1 trial participant
INT_7	Specialist frontline paramedic	11–15 years	Phase 1 trial participant
INT_8	Key Informant	11–15 years	Phase 2 trial participant
INT_9	Key Informant	11–15 years	Phase 2 trial participant
INT_10	Key Informant	1–5 years	Phase 2 trial participant
INT_11	Station-based manager	16–20 years	Phase 1 trial participant
INT_12	Key Informant	1–5 years	Phase 2 trial participant
INT_13	Key Informant	1–5 years	Phase 2 trial participant
INT_14	Station-based manager	20+ years	Phase 2 trial participant
INT_15	Frontline paramedic	11–15 years	Phase 2 trial participant
INT_16	Frontline paramedic	20+ years	Phase 1 trial participant
INT_17	Specialist frontline paramedic	16–20 years	Phase 1 trial participant
INT_18	Specialist frontline paramedic	11–15 years	Phase 1 trial participant
INT_19	Station-based manager	6–10 years	Phase 2 trial participant
INT_20	Frontline paramedic	1–5 years	Phase 2 trial participant
INT_21	Frontline paramedic	1–5 years	Phase 2 trial participant
INT_22	Frontline paramedic	6–10 years	Phase 1 trial participant
INT_23	Station-based manager	20+ years	Phase 1 trial participant
INT_24	Frontline paramedic	<1 year	Phase 2 trial participant

INT_25	Specialist frontline paramedic	16–20 years	Phase 2 trial participant
INT_26	Station-based manager	1–5 years	Phase 2 trial participant
INT_27	Station-based manager	6–10 years	Phase 1 trial participant
INT_28	Key informant	unknown	Oversighted both phases
INT_29	Key informant	unknown	Oversighted both phases
INT_30	Key informant	unknown	Oversighted both phases

2. Occupational violence and workplace health and safety

The evaluation of the impact of BWCs on occupational violence and workplace health and safety is complex. Drawing on the survey of frontline paramedics and the in-depth interviews, this section of the report presents findings on the implications of OV for paramedic workplace health and safety, including physical, mental, and emotional safety and wellbeing, as well as the implications of emotional exhaustion and burnout for retention of staff within the organisation. In this section, we also explore paramedics' perceptions of the impact of BWCs on their safety and capacity to manage risk. Good practice risk management strategies and challenges are also identified.

2.1. Implications of OV for paramedic wellbeing and retention

Most participants recognise occupational violence (OV) as a significant issue for frontline paramedics and that OV is closely associated with their experiences of workplace health and safety, including physical, mental, and emotional safety. The participants acknowledged that OV is a significant factor that impacts young and inexperienced workers and suggested that it contributes to higher levels of turnover and burnout in the early years of a career. This was reported by frontline workers, more senior staff, and key informants. The challenging nature of frontline work in paramedicine was also acknowledged by those staff responsible for managing workplace wellbeing risks across the organisation:

> *So, things like exposure to trauma, low job control, role overload, exposure to occupational violence. I think they're the psychosocial hazards and risk present within our business are probably quite a lot higher than most other industries or businesses in Australia. I think, as well, a lot of those are inherent in the nature of what we do as an emergency service. Exposure to trauma by very nature of being a frontline emergency service dealing with healthcare and people at their worst, there are limited ways in which we can eliminate that risk.* (INT_12)

Similarly, for those key informants outside the organisation, it is clear that there is an understanding of the long-term impact of trauma and violence on workers in this field.

> *The high rates in sick leave, burnout, turnover, variety of wellbeing effects in their personal life. I think it can lead to psychological injuries, obviously, like high rates of trauma-based injuries, PTSD. It has long-standing effects on them.* (INT_13)

A participant in a more senior station role identified that NSWA had 'a young workforce and a low retention rate' and further explained:

> *Me personally, I've been in the job long enough that it doesn't bother me anymore, but for a younger paramedic it is enough to make them question their role in this job. It makes them not want to be in the job. They don't feel safe at work, they don't want to be here.* (INT_15)

There is also a recognition among station staff that it is necessary to develop a stronger strategy to address occupational violence in their day-to-day work:

> *I think there's a real appetite amongst paramedic staff after the death of our colleague earlier this year, I think there's a real appetite from paramedics to continue doing whatever the organisation can to reduce episodes of occupational violence.* (INT_11)

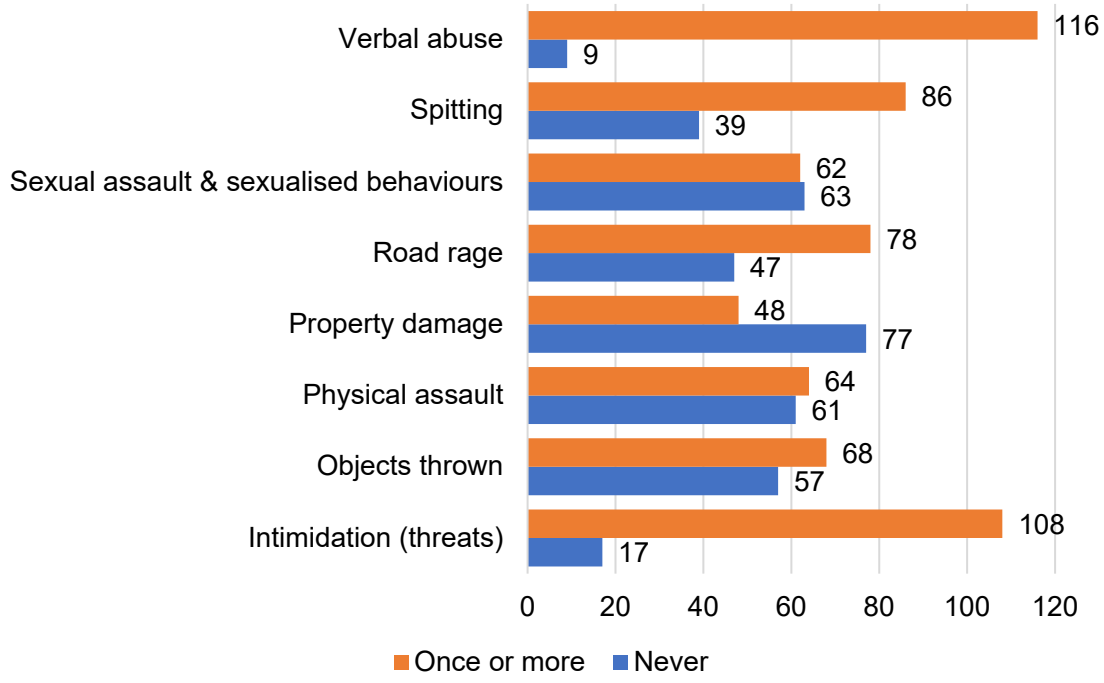
2.2. Experience of violence

To explore the level of OV experienced by frontline workers, the paramedic survey asked, "Have you experienced one of the following types of violence (in the past 6 months?) and if yes, how often?"

Respondents reported that they had experienced all the highlighted nine types of violence. When analysing the number of cases that occurred at least once, verbal abuse was experienced the most, followed by intimidation, and spitting (Figure 12). Conversely, property damage was the type of OV experienced the least (i.e., more often reported as never experienced) (Figure 12).

A limitation of the survey design was that no definition of sexual assault was provided to participants and the sequence of questions resulted in participants being asked about the incidence of sexual assault before being asked about the incidence of sexualised behaviours. This led to concerns over misinterpretation of what behaviours constituted sexual assault and the potential miscategorisation of sexualised behaviours. Hence, the data on incidences of sexual assault and sexualised behaviours have been combined in this report. It is noted that the survey identified a higher incidence of sexualised behaviours or assault than has been reported internally to NSWA, potentially due to the nature of the survey.

Figure 12: Experienced types of violence in the past 6 months – overall (reported times of OV)

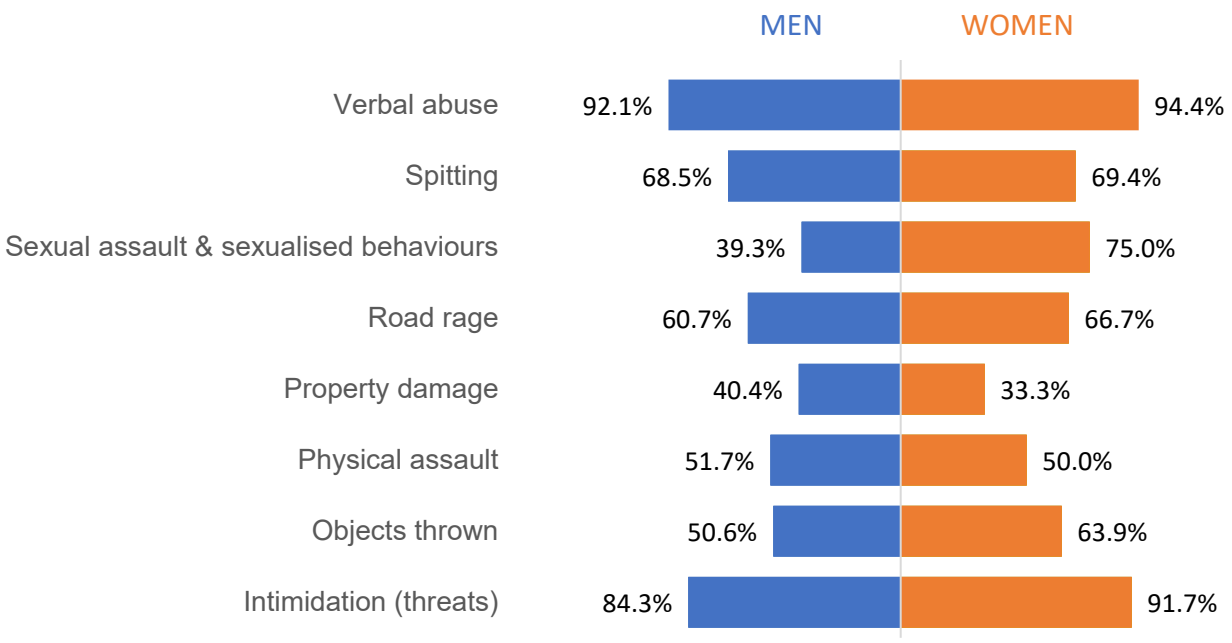


Some interview participants also identified that they had experienced occupational violence:

> *I have been assaulted there, as well. But I'm [there every day], sort of thing, as well. So, no, you definitely do. It definitely does happen. But it's just a matter of how often it happens.* (INT_7)

Exploring the survey data for gender differences in the experience of violence (see Figure 13 below), it becomes apparent that women paramedics are more frequently and more substantially exposed to sexualised behaviours and thrown objects. Overall, verbal abuse and intimidation are the most experienced across both genders.

Figure 13: Experienced types of violence in the past 6 months (once or more) – men and women



2.3. Normalisation of OV

The data on the experience of violence shows that there is a widespread occurrence of OV directed at paramedics. It is possible, however, that the reporting of OV may remain lower than the actual incidence, given that much of the violence experienced is normalised as 'just part of the job'. A key theme that emerged from the interview data is that while almost all participants acknowledge that OV is present in their daily work, they identified that it is sometimes difficult to discern when they should report a particular incident, given that they may have a very high tolerance for 'bad behaviour'. They feel it is unclear where along the spectrum of poor behaviour they should report an incident:

> *We get sworn at daily. We're exposed to it at least daily. It is so normal for us to have a measure of violence in our everyday work that we don't bother reporting it. It's just the way it is. We accept it. Just like a soldier would accept getting shot at.* (INT_5)

> *I do very much understand that we just, as paramedics, it's part of the job. We just accept it. It's part of our role. This is what our role is and it's difficult to delineate between what is part of our role and what is us being verbally abused by our patients when they shouldn't be allowed to.* (INT_27)

Paramedics mostly recognise that patients may be in a particularly vulnerable place where pain or intoxication may play a role in the language used or the attitude of patients. This is often expressed as excusable behaviour.

> *If someone's swearing at us, it's like oh well, they're upset, or they're under the influence of drugs or alcohol. So, it's part of what happens. We just kind of normalise the behaviour, and we don't really accept that, sure, someone saying a rude word to you once is one thing.* (INT_27)

Paramedics identify a spectrum of occupational violence; however, given that they have become accustomed to dealing with a significant level of poor behaviour, it may become difficult to distinguish when such behaviour becomes more escalated.

> *Though I think I came to that realisation a little bit late, that what I was experiencing isn't just normal and does definitely fall into a category of – at least, potential significant harm. That sort of a thing. But yeah.* (INT_27)

Others identify that their focus on patient care and tolerance for OV may lead to them excusing physical injury or even assault.

> *Then, on top of all that, altruism gets in the way. This was actually recorded on a body worn camera, and I was talking to somebody the other day about it. There's the moment that just before I was kicked, I realised that I was about to get kicked, and I moved my face off to the side, and he got me a glancing blow just over here. I recognised that it was about to happen, so I moved. Apparently in the in the clip on the body-worn camera, you can see that there's a split second where his persona changes, and then it happens. Then the comment was made that I was so calm and still quite nice to him afterwards. Well, that's because I realised that it wasn't personal. I just happened to be the stupid person putting my face where his foot was, and he's in this life and death struggle.* (INT_5)

Paramedics may find it useful if future BWC training acknowledges that there is a spectrum of violence, while also recognising paramedics' professional judgement and autonomy provides guidance, particularly for less experienced paramedics, on how to identify when BWCs should be activated.

2.4. Encouraging reporting of OV

Some senior station staff identified that they had been able to encourage frontline paramedics to use BWCs because it allows them to capture and validate data on the occurrence of OV. For these participants, it was important to report cases and document effectively the impact so that better strategies could be developed:

> *So, unless they can collect data on stuff to say, this is happening, now we need to address this, this is escalating, we need to address this. If we sit back and go, can't be bothered because nothing happens, then we don't progress forward and get the things we're asking for.* (INT_25)

At more senior levels, it has been recognised that a cultural change across the organisation is needed to ensure that OV is appropriately reported:

> *We have been historically very poor at encouraging people to report all their instances. That's something – that's one of the cultural elements we're attempting to change in our space at the moment. That you don't – "why do you report violence?" … "It's for data collection and policy" and – that doesn't motivate people to report. So, we started changing the messaging around*

reporting. Understanding who our people are. Our people are helpers and they're empaths so ... You don't report – if you don't want to report for yourself, report for your offsider. Make sure your colleague is listed if something bad happened to them on a shift. Do it for them. Now, we're taking it a step further where we're saying it might not be for you now but think of all your reporting as an insurance policy. (INT_10)

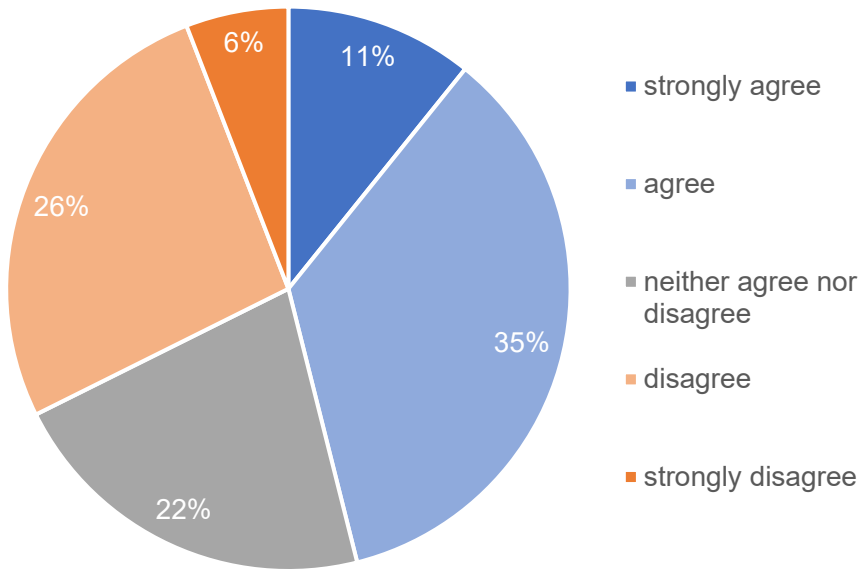
In the future, it may be important for NSWA to focus on ensuring consistent messaging about reporting OV as part of the cultural change relating to the introduction of BWCs into stations.

2.5. Perceptions of whether BWC may impact OV

NSWA frontline workers were further asked whether they believe that BWCs would reduce the likelihood of OV. Specifically, on a scale from 1 (strongly disagree) to 5 (strongly agree), they responded to the statement, "I think BWCs reduce the likelihood of an Occupational Violence Incident."

Figure 14 illustrates that 46% of the respondents think that BWCs would reduce OV towards paramedics. In contrast, 32% do not believe that BWCs would reduce OV incidents. Almost a quarter (22%) of respondents do not take either position, remaining neutral.

Figure 14: Perceived likelihood of OV incidents reduction through BWC



The 22% of undecided respondents correspond with the 23% level of indecision among respondents when asked whether the advantages of BWCs outweigh the disadvantages (Figure

30). The level of ambivalence found in the survey responses may relate to frontline workers' mixed experience of BWCs. Participants in both the surveys and interviews identified that BWCs have the potential to sometimes deescalate a conflict situation but may also lead to an escalation of bad or violent behaviour. It was also noted that whether BWCs will impact a challenging situation may depend on a patient's level of functional rationality, which drugs, alcohol, pain or psychosis may impair.

INT_4 identifies occasions where the use of a BWC may have limited impact on patient behaviour:

> *The people [who] end up physically assaulting us generally are not very rational at the time. Whether they're mentally unwell or they're drug affected or whatever it might be. Like generally speaking, they're so irrational that knowing that they're being recorded while they're doing it isn't going to change their behaviour because their decision-making process is so disordered to begin with. So those people – and it's been my experience with telling them as well that the camera is on – those people continue to act in that way. If they're going to be physically violent towards us, they're going to do that whether or not they think they're being recorded.*

This sentiment is echoed by INT_16:

> *I think the camera is something – hopefully if somebody sees it, it might make them change their mind as to whether they're going to make a threat to us or be physically violent, but unfortunately the majority of people that I go to in that situation have significant mental health issues. They're either affected by drug and alcohol, and they're not going to notice a camera. They're going to notice more what I say and what I do…I think, in that situation, whether you have a camera on or not, they're going to behave the way that they're going to behave because they're not making sense, they're not understanding, they don't have the gravity of the situation that they're unwell.*

INT_15 suggests that in some incidences BWCs have not de-escalated the situation, but have led to increased aggression:

> *So from what I've seen with my crews, they have escalated it every time. They have escalated every scene. Because the general public are not used to us wearing cameras, they instantly find them – I don't know exactly how to phrase it, but they – just for some reason when we have them on, things get worse from what I've been seeing. I haven't activated mine and I haven't been on scene with someone who has, but this is just reports from my staff, hence the reason why our stats are dropping, because no one wants to wear them.*

INT_6 identifies that sometimes the aggression stems from an assumption that the presence of a camera suggests a police role rather than a paramedic role:

> *There have been several occasions where people just failed to realise and they will assume I'm police and want to stand up and fight.*

On the prospect of escalation, one paramedic (INT_7) noted:

> *I don't think I've ever had it escalate situation. I've been fearful of it. I think the last time, it was only last week, I didn't tell the guy that I turned the camera on, just because he was very drug-affected, very [wrecked], anyone could see. You couldn't really rationalise with him, so I just*

thought that this was going to give him something to ark up about, so I just turned it on and left it on. But [we had two] incidents later on that I think I'd turned it off because we were okay.

While paramedics described how escalation and de-escalation could both result from using BWCs, they also identified that a neutral impact was possible. One paramedic highlighted this neutral impact, but went on to describe an incident where the dynamics changed rapidly, and reminding the patient of the operation of the BWC served as a preventative (INT_7):

To be honest, I have - on an incident, my incident situation, I think generally across the board I found it neutral. I found that it didn't escalate, it didn't de-escalate. It was just like, okay, whatever, I don't care, or they just ignored it or whatever. I had one situation where a patient who I knew didn't like me, he didn't get what he wanted from me. Then as he was walking away he decided, for whatever reason, he turned back towards me – and I'd already told him I was filming earlier, so I had the camera turned on. He turned back towards me and was looking me in the eye, and had no reason to come back towards me because we were finished. I just said to him, I just want to remind you, mate, that I am recording right now. He looked at me and just turned around and walked off. So, I know in that specific situation, it definitely de-escalated that situation, there.

Many interviewees identified that BWCs could not be seen as a silver bullet, but needed to be embedded within a suite of measures designed to create occupational safety, where they were understood to be more effective (INT_27):

…in my experience, it's good as one piece in a bundle of precautions, like having conversations about safety on the way to a job with your partner. Requesting police before arriving on a job. Waiting for police. Knocking on the door at a distance. Only going in if you think it's safe to go in. Removing unnecessary bystanders, all of those types of things. I think it's useful in a bundle. It's not like a silver bullet that's going to avoid other things. It's not going to avoid things on its own, right?

In an unpredictable work environment, BWC were understood as a possible deterrent which participants espoused as an effective line of response (INT_11):

I think the best line of defence is the deterrence. Look, I think that there's a number of those types of examples that the staff have advised that they're activating their camera, and the individual has calmed down.

Generally, there was a perception that it was worth trying the BWCs to see if they had an impact on the incidence of OV. However, even among staff who supported the introduction of BWCs, there was an acknowledgement that it was challenging to ensure staff had a sound understanding of how BWCs could be used to support paramedics in the field:

I remember in one of the – it might have even been at a leadership thing I went to. They showed us a perfect example of de-escalation which – like it was brilliant. It was great. It was like it had been scripted. After seeing that, I was trying to tell crews, this is what it's for and it does work, and it can have this effect if used correctly with our communication skills and all those sorts of things. (INT_27)

These experiences highlight that BWCs may not be a solution to increasing OV, but need to be seen as part of a suite of activities, including risk management and de-escalation training, to address paramedic workplace safety.

A further theme that emerged from the interviews was the possibility of bystanders or family and relations of the patient instigating the aggression or violence rather than the individual patient. INT_14 identified such an occasion in which their initial risk assessment had suggested that the patient was not violent or aggressive, so the BWC was not taken into the incident. However, the situation changed dramatically as a result of family intervention:

> *It wasn't that sort of job. I only wear it when I have an inkling that there might be a violent offender on the other end of the line or in behind the door. These complaints, they're like, granny fell over and then suddenly grandma's friends are having a go at you, so you don't have the camera on. So I don't know…* (INT_14)

This experience suggests that the introduction of BWCs may also need to be supported with stronger training in dynamic risk assessment and identification of escalation signs.

2.6. Perceptions of risk

While the experience of OV is statistically relatively low, the perceptions of the incidence of violence and the ensuing perceptions of potential risk are experienced differentially among particular cohorts of frontline paramedics. Most notably, participants from a range of stations noted that given the socioeconomic make up of their communities, risk perception varied markedly. However, factors such as operating individually or within a team, age and gender also affected paramedics' perceptions of risk.

2.6.1. Socioeconomic and geographic factors

A frontline paramedic who had experience working in stations in the north, south and east of Sydney noted the significant differences in the perception of not only risk but of the actual types of violence experienced:

> *The fact that they're exposed to it so consistently… in the east… you are exposed to all these things, you accept them as normal, whereas you come from the north [or] the south, you go holy shit, how do you work in this place?* (INT_5)

INT_16 recognised that the selection of a station in South-Western Sydney for phase one of the trial may have been due to the high incidence of OV in that region. At the same time, INT_22 identified some differences across the Sydney metropolitan region:

The southwest of Sydney, I think, one of the points that can't go amiss is the fact that it does, on average, have a lower ceiling for its socioeconomic status. With that comes a mix within the patients and the clients, the consumers, if you will, that we come across. … I think that as you analyse different parts of Sydney, what type of drugs or the level of alcohol and, I suppose, the kinds of alcohol that you consume is a different thing. Chronic alcoholism, on that topic, tends to be – will always be a rather constant factor given the way society views alcohol right now. In terms of drugs, I suppose specifically, only really tends to be two key contributors to it, and that would be heroin and methamphetamines.

In contrast, a participant from a station in the northern suburbs of Sydney noted:

It is completely different, yeah. Again, from the city, as well, completely different. Because [there] you have all the drugs and the alcohol... But up here, it's more the nanas and the people who have more money, and the higher socioeconomic kind of area. So, it is very different. (INT_19)

Regionally-based staff also expressed concerns that related more to the level of isolation and remoteness but also included concerns relating to socioeconomic status in particular communities.

Some people … say, 'well, it doesn't happen out in the country', well, it does. It's just that you don't necessarily see it. But if you were a single responder, and you went out one hour in the middle of nowhere, and you had very little contact via radio, and you were involved in a domestic incident, where's your help? (INT_5)

2.6.2. Individual or team operations

Some participants held roles that required them to attend to patients on an individual basis rather than as a member of a team. Such roles may have been in a mental health role or as a special operations team member or a sole responder on a motorcycle. INT_18 identified an inherent increase in risk perceptions among those working independently.

In terms of [relations] and body-worn camera stuff, people obviously worry about working single and that risk to yourself with the perceived risk of occupational violence and things like that.

2.6.3. Age

Several interview participants identified that age and experience impacted their perceptions of risk. Among more experienced paramedics, identification of risk factors tended to lead to more cautious behaviour:

I will hang around and wait until I've got backup, whether that's from another crew or police or both and then try again, but, yeah, I'm too old to be rolling around scrapping with people now. (INT_6)

Among younger or less experienced paramedics, some identified that they felt more confident while wearing a BWC than without:

It makes me feel more confident, absolutely, yeah. I feel like I have - it might sound a bit silly, but I feel a bit stronger on scene or I feel like I have a slightly greater presence because of it. Even if it's off and it's just sitting here, I just feel like there's a … I feel better having it because I feel like there's a backup with this ... In case something goes wrong, I've got it to protect me,

> *and it will generally prevent something from going wrong because somebody will see it and not want to act out. The public doesn't know if it's on and off, they can't see the flashy lights, so yeah, really appreciate having it on.* (INT_1)

In response, some station managers expressed concern that the introduction of BWCs may create a level of over-confidence among younger paramedics. INT_25 notes the perceptions among some younger male paramedic spans from:

> *Don't need it, I'm fine…I've got this…or that, yeah, I'm going to wear it and [If] I wear it, I've got to go that extra mile now and step up and be in charge and be the hero of this thing.*

While INT_2 notes:

> *I just don't know whether there'd be people, particularly younger people in the service, that may feel that it's a substitute for the police, oh, we've got our camera on, we'll just go in, it's fine. That's been really the biggest concern with the cameras from my point of view.*

INT_1 emphasised, that while he was more confident, he continued to monitor and manage risk during his call-outs:

> *Yeah. I feel like I would still be just as cautious walking into precarious scenes, but I feel slightly better about going into those kinds of scenes if I do have a camera, because I know I can just quickly turn it on and so it might aid in some kind of way.*

Confidence and perceptions of risk related to age and experience also were associated with gender.

2.6.4. Gender

Other participants identified that perceptions of risk and vulnerability varied by gender. For INT_24, women were more likely to experience patients using inappropriate language that could lead to sexualised commentary or actions:

> *I think gender does come into things in the sense that people – we definitely have people talking us – calling us sweetheart, things like that, complimenting us, calling us beautiful all the time – it's just very iffy.*

INT_25 identified that perhaps younger women in all-female teams might feel a little more vulnerable, but some men on her team tended to be over-confident about potential risks:

> *I think when we've got say, two younger girls together, they're more likely to be the crew that not only have they signed one out, they've both got cameras on. Obviously, they feel a little bit more vulnerable, but I often find, we [women] don't pose as much as a threat [to patients] sometimes as men.*
>
> *So sometimes I [point] that out to the boys that, it's not always about whether or not you feel you could look after yourself, it's someone might see you as a threat and they might be [aggressive] oh, they said this, they did this, and you've done none of such things. Without that [camera] there again, it's that to keep you safe.*

Training on using BWCs may need to be embedded in broader risk management training and strategies. These approaches may need to be tailored to the specific needs of paramedics depending on roles, locations, and gendered patterns of practice.

2.7. Dynamic risk management

Among the interview participants, perceptions of risk were alleviated with increased experience supported by formal training in dynamic risk assessment. Experience and training enabled participants to develop a greater awareness of the potential for OV and build strategies to manage risk within a volatile situation.

As a baseline, INT_21 identifies the key variables that signal a higher risk of OV for most paramedics:

> *Those tend to be the key players when it comes to [risk] – when we consider things like drug-affected. Alcohol, opioid or heroin use and ice methamphetamines. The latter two almost always intravenously. It can get quite a reaction on that front… I think that, operationally, it's something that we've all learned and been taught to approach with a good amount of caution. They're just highly unpredictable. The environments associated with people who engage in this lifestyle, do tend to be quite hazardous in themselves as well.*

INT_19 emphasises that most paramedics tend to be risk averse and are cautious in situations where conflict is present.

> *We don't go into situations – or we try not to put ourselves in situations where we are in danger, anyway, unless the police are there. So, I don't want having a camera to put any of our staff in a situation where they think they are protected, when, really, they can still get hurt.*

However, many participants noted that a situation that seems low risk can escalate unexpectedly and quickly. More experienced paramedics identify issues and are constantly surveying changes in the environment:

> *That hammer sitting down by his feet there, I don't think he's hammering nails at the moment mate, you know. If you look you'll always find something that can hurt you. You've just got to be very aware, don't enter if you don't feel happy. A lot of that is gut instinct, you know? A lot of it is gut instinct, and that develops over time, you just don't learn that from a book. … I mean we're always – every assessment is scene safety, but that – sometimes it just gets forgotten.* (INT_6)

Participants identified that these skills are developed through experience and practice:

> *But for myself, I think I've grown, in the last six years, to know what situations are like and how to look around and protect myself and my partner, and read the room. I would never put myself – or, I don't think I would, anyway [laughs] – in a situation where I'm [at risk].* (INT_19)

As noted above, BWCs do not completely remove the risk of OV. Building training on the use of BWCs into more generalised training on risk assessment and management may provide ways of improving safety among younger and less experienced paramedics.

Some more experienced staff provided examples of their personal strategies for managing risk. These could also be incorporated into training processes for early-career paramedics.

A frontline paramedic considers safety and risk every shift, by checking out a BWC and ensuring it will be available throughout the day. However, the BWC also becomes part of the risk assessment for each call out during the day:

> *I think everyone does it differently. For me, I sign out in the morning, put it in the car and then in the car I sort of leave it until I go into a job. Then I chuck it on and then I don't put it on standby unless I'm like oh, it's a bit sketchy or I'm like notes aren't all there or it just seems – there seems to be there could be some risk. Then I'll put it on standby and it sort of just stays in standby then on my uniform. Then I'll turn it on if there's risk … If I walk in and then I see that oh, like it's little old nana and she's all good, like straight in the pocket.* (INT_21)

INT_6 notes that it is not always apparent when entering a situation that there may be risk, but in any case, there are strategies that can be applied in case the situation changes rapidly:

> *Just things that I do – I've always got a couple of door [chocks] in my pockets…So, I will chock and block as I go through someone's place so that I can get out quickly if I need to. I won't stand anywhere where my egress is going to be compromised. I'm usually looking around for an exit. If things are going to go south, I will just pick up my stuff and leave.*

INT_25 notes that if paramedics have a consistent approach to safety and terminologies this can help to communicate concerns to their partners:

> *So, one of the things that's kind of over my ears is we will refer to a [particular] kit. So, we have a number of kits in our cars that you know, drug kits, oxygen kits, life pack kits, first aid kits but if one of us say, oh, can you give me a hand we're going to need the [particular] kit, we don't have a [particular] kit, doesn't exist. That's our way of letting our partner know, I've seen something I don't like, we need to get out of here and we just don't even grab anything, just go.*

Experienced frontline paramedics have a wealth of knowledge about managing risk and developing strategies to care for their team members. This knowledge should be harnessed more broadly and systematically shared with less experienced paramedics. Training in the use of BWCs should form part of risk assessment and management training, with developing strategies and techniques a key part of the training.

2.8. Workplace wellbeing (emotional exhaustion and burnout)

The paramedic frontline worker survey also included questions on workplace wellbeing. The questions aimed to explore how frontline staff felt while conducting the study.

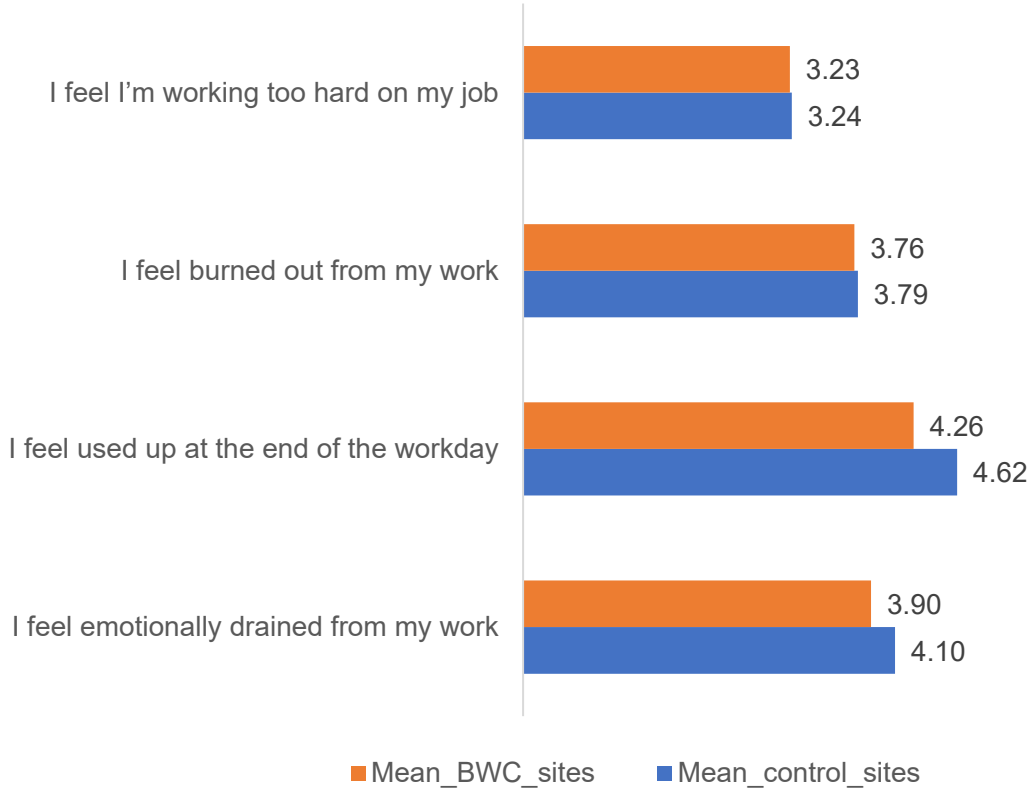
Staff were asked to rate their experience with four statements on emotional exhaustion on a scale from 1 (never) to 7 (every day), considering their current personal wellbeing at work. The emotional exhaustion dimension assesses the feelings of being emotionally overextended and exhausted. Based on literature (e.g., Hu et al., 2020), a rating of 'once a month' (3) is considered moderate and 'a few times a month' (4) is considered high.

Figure 15 illustrates that the respondents experience emotional exhaustion between moderate and high, with the *feeling of being used up at the end of the workday* and the *feeling of being emotionally drained from work* as high.

Comparing the BWC trial sites with the control sites shows that staff at the control sites are emotionally more exhausted than those at the trial sites. While this pattern is notable, the survey data alone does not provide enough evidence to establish a causal link between the use of BWCs and a reduction in emotional exhaustion. There may be other factors at play that contribute to a more positive outcome in the trial sites. It is possible that a 'Hawthorne effect' may be present – that is, the simple experience of a station being included in the trial may engender a perception that the organisation 'cares' about their wellbeing; such perceptions have been shown to influence emotional exhaustion scores, as seen in the Hawthorne trials (Muldoon, 2017). While the qualitative interviews explored wellbeing experiences among participants, little evidence emerged to support a suggestion that BWCs directly improve wellbeing by reducing emotional exhaustion or burnout.

To evaluate emotional exhaustion, analyses used the standardised Maslach Burnout Inventory (MBI), which includes nine specific questions on emotional exhaustion. As this survey had to be reduced from nine to four questions in rounds 2 and 3, these results have been considered cautiously. Despite this limitation, analyses of the first-round survey, consisting of nine questions, showed an overall moderate level of emotional exhaustion.

Figure 15: Workplace wellbeing (emotional exhaustion) – divided into BWC trial and control sites (1 = never; 7 = every day)



Among the participants of the qualitative interviews, few suggested that their experience of OV had contributed to exhaustion or had even led to them taking significant time off:

> *I haven't ever had to take time off. I have had some issues before with pressing our duress alarms and things like that and unfortunately discovering [there was a statewide malfunction]. I don't think there's anything that's – at this stage in my career, at least, has prevented me coming into work or prevented me going home feeling fit and healthy.* (INT_2)

INT_14 identified that they felt that the use of BWC could reduce the number and severity of OV incidents, resulting in improved wellbeing outcomes for paramedics:

> *But most of the time, I think they would save time, in terms of de-escalating behaviours and also saving money. In terms of paramedics who aren't going to get PTSD who ordinarily might.* (INT_14)

While it was recognised by many that OV contributes to emotional exhaustion and burnout, it was also suggested that OV was only one contributing factor to burnout among paramedics.

> *I think there is a link [between sick leave and OV], but it's not just aggression. Usually, the aggression itself is just another piece of the puzzle, but people taking sick leave due to mental*

health, aggression's one of them, fatigue, burnout, amongst many other things. But the aggression is just another piece of the puzzle. It contributes to burnout.

BWCs should not be considered a single solution for addressing paramedic burnout or emotional exhaustion. A range of factors contribute to burnout and emotional exhaustion and while increasing OV may be a significant contributor, it cannot be seen as the primary catalyst. BWCs may be one element in a broader strategy to address paramedic wellbeing, but may not be a standalone solution.

2.9. Workplace safety

A further aspect of the survey covered workplace safety. Paramedic frontline workers were asked to agree or disagree on adjectives or phrases that describe their job.

A selection of these questions is depicted below, demonstrating that the respondents appreciate their job as quite dangerous (74%, Figure 16), hazardous (83%, Figure 18), and risky (78%, Figure 19). Regarding their safety, paramedics' perception is somewhat more balanced (Figure 17). While the disagreement (39%) and the neutral (37%) view on safety are similar, the agreement of a safe job is rated at 24%. This implies that frontline workers perceive their job safety as individually differentiated.

Figure 16: Dangerous

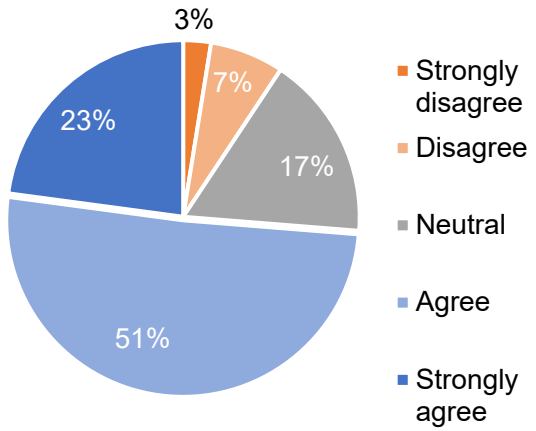


Figure 17: Safety

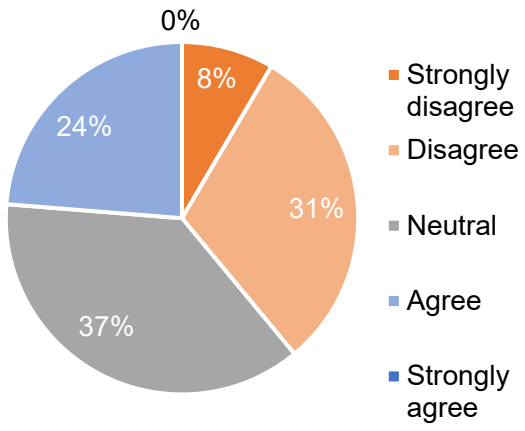


Figure 18: Hazardous

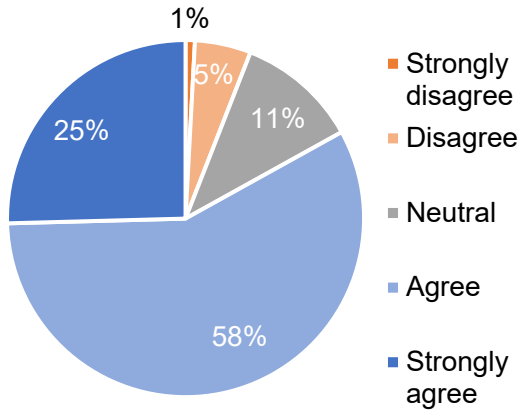
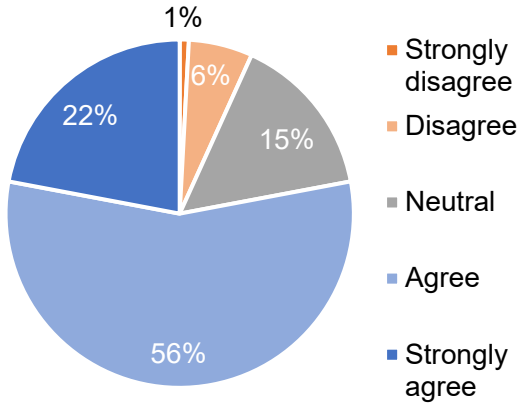


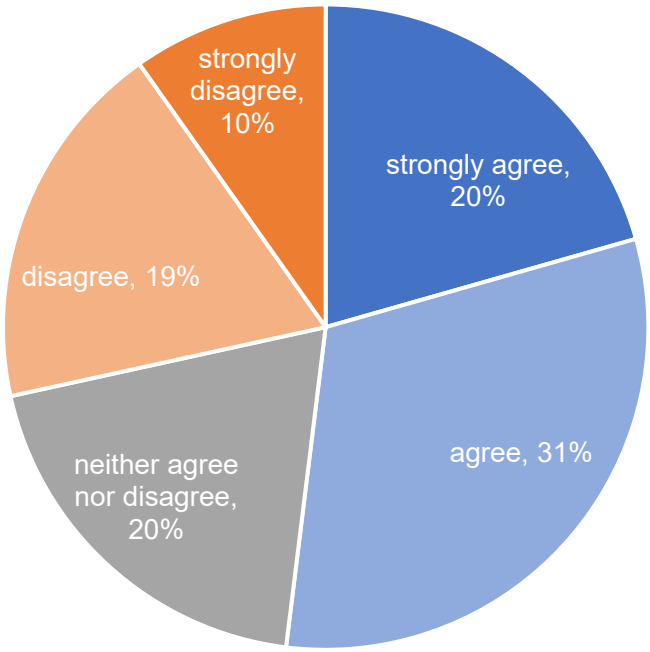
Figure 19: Risky



This quite balanced view of job safety leads to the question of whether frontline paramedics feel using BWCs would increase their safety. The survey covered this question when asking the respondents if wearing a BWC would give them a sense of security/safety.

Figure 20 highlights that slightly more than half of the respondents agreed to a perceived sense of safety by wearing a BWC. One-fifth had a neutral view, whereas 29% disagreed. As mentioned earlier, these different perceptions may result from personal opinions on the advantages and disadvantages of BWCs (Section 3.6).

Figure 20: Perceived sense of safety by wearing a BWC



Among the interview participants, there were a number of paramedics who identified that wearing a BWC gave them a stronger sense of safety and confidence in their work:

> *I feel safer, and as I've said I would feel really underdone if I was to turn out without a camera.* (INT_6)

Others suggested that the introduction of BWCs could address declining safety standards across the organisation:

> *We had a fair amount of safety in that code, and then slowly over time, it's just been eroded to the point where no one cares. So when we come back to the body worn cameras, right from the very, very start, I've been a pretty big advocate of it, and it's one of these things that I see it as our way into the future, or at least one of the ways into the future with managing what we see in our environment, because we don't have the protections that we used to have, and we don't have the people that I was exposed to that were streetwise that can pass on that knowledge. If we do have them, we don't have as many as we had.* (INT_5)

It was also acknowledged that while a BWC could record a violent incident, it may not prevent an intentional violent incident and protect the life of a paramedic.

2.10. Recommendations

- BWCs need to be seen as just one element in a range of strategies to address OV towards paramedics.
- BWCs need to be seen as just one element in various strategies to address burnout and emotional exhaustion among paramedics.
- NSWA needs to encourage a culture of change that supports consistent reporting of OV incidents across stations. This will need to be communicated consistently from all levels of management across the organisation.
- A future BWC program needs to acknowledge that there is a spectrum of experienced OV, and staff need support to identify a low-threshold level of OV that should trigger the activation of the BWC.
- Staff training in BWC use should be tailored to the needs of particular cohorts, recognising the skills and autonomy of experienced staff and sharing their knowledge with less experienced staff.

3. Internal perceptions of BWCs – Paramedics and managers

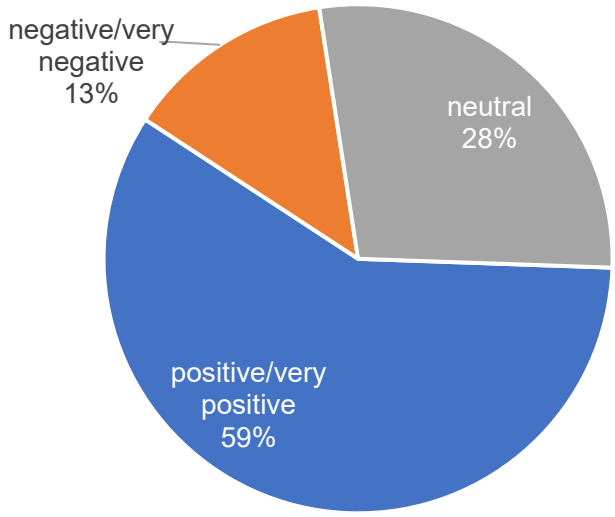
Drawing on the three phases of the frontline paramedic survey and the in-depth interviews, workers were asked their views on the use of BWCs by paramedics. The following analyses show their perceptions and illustrate their perspectives on the advantages and disadvantages of BWCs.

3.1. Overall paramedic perceptions of BWCs

The overarching question investigated paramedic frontline workers' overall attitude towards BWCs. Specifically, paramedics were asked to rate on a scale from 1 (very positive) to 5 (very negative) "What is your overall attitude towards BWC?"

Almost 60% had an overall positive perception of BWCs, and only 13% had an overall negative attitude (Figure 21). However, over a quarter (28%) responded neutrally. This means these respondents are either undecided or see the advantages and disadvantages as balanced. Insights into the perceived advantages and disadvantages of BWCs are provided in 3.6 (Table 3 and Table 4).

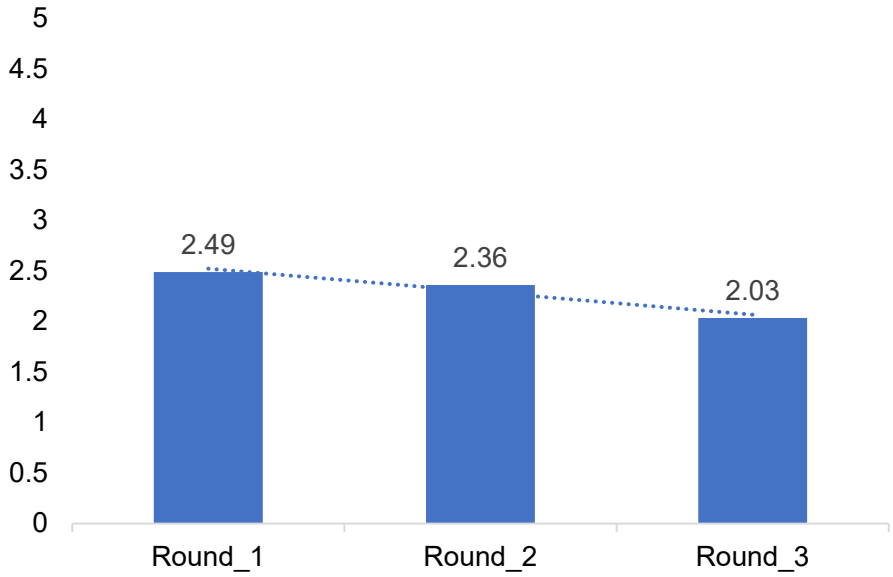
Figure 21: Overall attitude towards BWC across all three rounds



Analysing the responses across the three iterations shows (Figure 22) that the overall attitude towards BWCs improves over the investigation period (see trend line). This trend may indicate that

the frontline workers became more comfortable with the BWCs, and by acquiring experience, they rated the advantages higher than the disadvantages. The trend is consistent over the three surveys but there are varying numbers of responses (Table 1).

Figure 22: Overall attitude towards BWCs (mean) – development over the three rounds (1=very positive; 5=very negative)

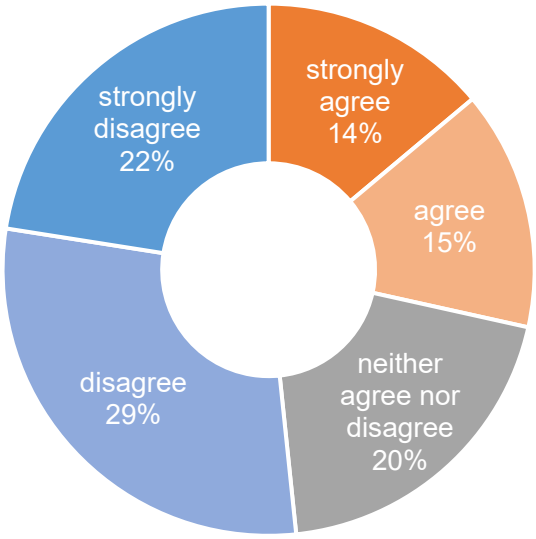


3.2. Choosing to wear a BWC

Another question asked of the paramedic frontline workers was their view on wearing a BWC. Specifically, they were asked, “If I had a choice, I would prefer not to wear the BWC.” (Figure 23).

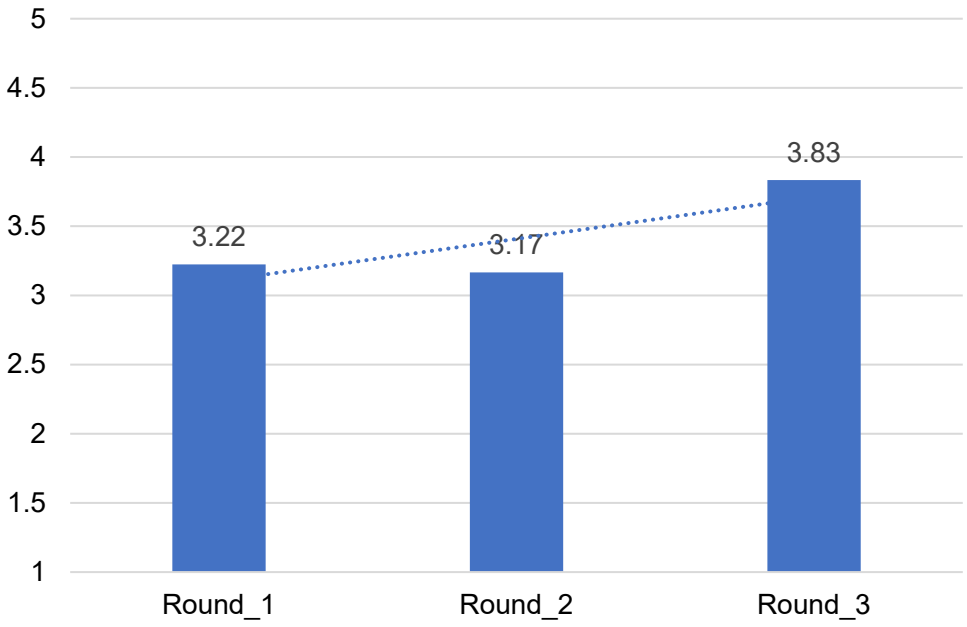
The question was formulated ‘negatively’ for survey technique purposes, using the word ‘not’. Hence, the disagree/strongly disagree responses mean a positive attitude toward wearing a BWC, which is slightly more than half (51%) of the respondents. Almost 30% would prefer not to wear a BWC if they had the choice. One-fifth of the responses were undecided. A contributor to this 20% could be paramedics’ mixed experiences with BWCs to date. As noted in earlier, BWCs have the potential to de-escalate or aggravate challenging situations with patients. Various positive and negative concerns were also identified through the survey's open-ended questions, which are highlighted in Table 3 and Table 4.

Figure 23: If given a choice, preferring NOT to wear a BWC



Interestingly, when analysing this question across the three rounds, it appears that the support for wearing a BWC increases over time (see trend line), hence, with experience (Figure 24). It may be assumed that by using the BWC, frontline workers' perception of the benefits of BWCs rises. However, it needs to be considered that the third round only attracted 33 responses (Table 1).

Figure 24: Choice of preferring NOT to wear BWC (mean) – development over the three rounds (1=strongly agree; 5=strongly disagree)

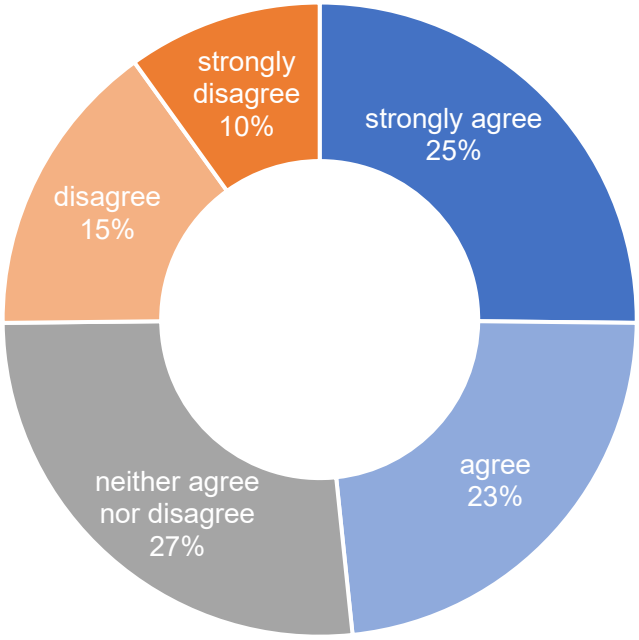


The paramedic frontline workers participating in the survey were also asked whether they prefer having a BWC while working in the field. While almost half the respondents agreed or strongly

agreed (48%), one-quarter disagreed or strongly disagreed; another quarter (27%) had a neutral view.

When comparing this question with whether paramedics would *not* wear a BWC if they had a choice (Figure 23), the responses to the two questions support each other.

Figure 25: Preference for having a BWC in the field



3.3. Paramedic perceptions of BWCs' impacts on physical, mental, and emotional wellbeing

When asked, "What impact do you believe BWCs have on physical harm against paramedics?" and "What impact do you believe BWCs have on mental and emotional harm against paramedics?", the responses to both questions were fairly similar, with a negative/very negative view at only 8/9% (*Figure 26* and *Figure 27*). While the positive/very positive perception of the impact on physical and mental/emotional harm substantially outweighs the negative/very negative view, a large share of the respondents has a neutral opinion, implying BWCs do not have an impact.

Figure 26: Perceived impact on physical harm against paramedics using BWC

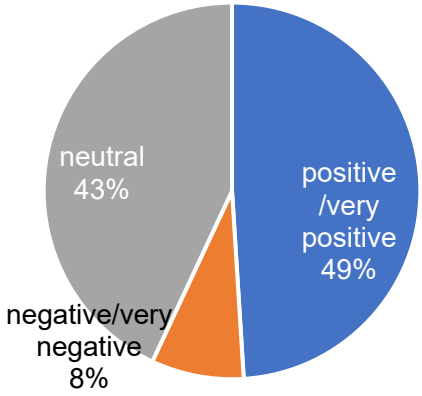
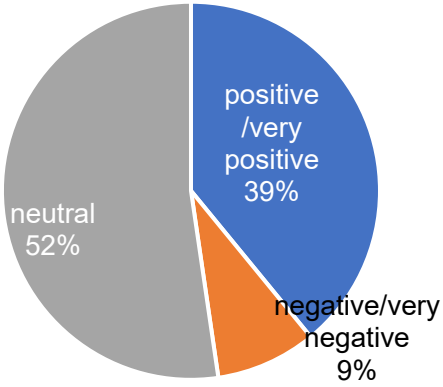


Figure 27: Perceived impact on mental/ emotional harm against paramedics using BWC



3.3.1. Paramedic perceptions of psychological wellbeing

Paramedics were conscious of the juxtaposition between perceptions of safety and an objective understanding of their physical and psychological safety at work, or lack thereof. While perceptions of safety may be dismissed as little more than a placebo effect, perceptions can critically impact employee wellbeing. The following passage from an interview with a Sydney-based paramedic highlights some of the nuances around the intersection between BWC usage and safety:

> *It's a good question. Do I feel safer? Really, I do feel safer. But I know that I'm not safer. Well, I don't think I am safer. You know what I mean? It's weird. I do feel like it's a little bit of a tool or a weapon. Not a weapon, I shouldn't say weapon. But it's just like something that you can use that you can potentially de-escalate. Or, even if it kicks off. But, at least for me, it's also the fact that you can get evidence of what they've done, as well. But, yeah, I do probably feel safer, but I don't actually think I am safer, if that makes sense. (INT_7)*

COGNITIVE LOAD

A key issue that emerged from the qualitative data analysis was the push and pull between the need for paramedic autonomy when choosing how, or indeed, if, to engage with BWCs, and the decision fatigue that arises when occupational safety devices such as BWCs are not compulsory to use. Making BWCs non-compulsory means paramedics must make ongoing decisions, individually and in communication with their colleagues, about whether to engage the camera or not, and then under what circumstances. This created a difficult nexus; as one participant (INT_3) described it, *"How do you balance reducing the mental load without actually imposing rules that create less autonomy and less safety in a sense, that's complex?"*

Participants reported how deploying BWCs was not a demanding or time-consuming process in essence but in the context of highly demanding, time-contingent work tasks and the extant pressures associated with the start of each new shift, even simple sign-out processes can be prohibitive, leading to an ongoing mental analysis of the costs and benefits of using BWCs for paramedics, further heightening the mental load.

PARAMEDIC DECISION-MAKING

BWCs also created decision-making pressure, both in terms of whether to use the cameras at all, and if so, when to activate them during a shift. Some participants highlighted how mandatory use would lower the cognitive load associated with deciding whether to check a BWC out or not. However, others noted that this would affect the sense of agency of the employee, creating further challenges and cultural resistance towards using BWCs.

One notable part of the decision-making load carried by paramedics concerns risk assessment or determining the threshold at which a camera should be activated. Risk was understood in terms of the frequency of a likely assault, with some shifts and geographic areas understood as inherently higher risk than others. Risk assessment was an ongoing process that began before a shift and continued throughout a shift and BWCs played a key role in this assessment process:

> *I know that assaults can happen at any time, and it's usually going to be when it's unexpected, as well. So, or, it can be [when it's expected]. Not usually, but it can be. But, yeah. No, I definitely risk-assess when I get to the job and make my decision based on [that]. Yeah.* (INT_7)

Paramedics described the need to normalise a low-threshold for activation, or in other words, create a culture where they are comfortable to activate the cameras when an unclear, seemingly minor threat may be evident. As one paramedic describes it:

> *I've got quite - I do and I think a lot of paramedics do, especially the more experienced ones, is having a low threshold for calling police and getting them involved in jobs that have the potential for violence. There is jobs on the edges of that that are entirely unpredictable. That's where I think the camera comes into play and is quite useful.* (INT_26)

The purpose of a lower threshold is to reduce the time spent deliberating over whether to deploy the camera, as a paramedic participant (INT_11) noted, *"…your threshold for activating it should be pretty low. You can always turn it on, and then ask questions later."*

However, this must be weighed against logistics, such as BWC battery life, and only resolves one aspect of the cognitive load associated with BWC-related decision-making.

An interesting and important part of the labour of decision-making around BWCs extended to how the patient was positioned and understood by the paramedic. As a caring profession, paramedics commonly described the empathy and care they felt towards their patients and this was not necessarily disrupted by violent behaviour from the patient, especially where the patient's

vulnerability was also evident, such as in the case of elderly patients or those with mental health concerns. And yet, one manager described a mental shift that was required to ensure the response to occupational violence was appropriately calibrated, noting, *"…a person goes from being a patient to an aggressor [when occupational violence is displayed]. Then when they're no longer aggressive and they're a patient again, maybe the camera can get turned off again." (INT_10)*

RECOMMENDATIONS

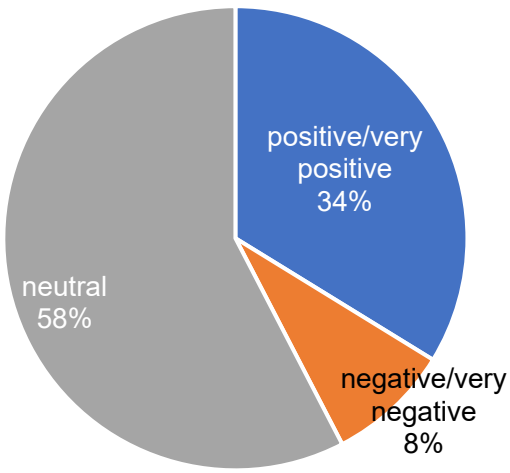
Excessive cognitive load, decision fatigue, and the related psychological strain could be minimised by mandating the use of BWCs by all staff. However, developing a roll-out strategy with clear communication and training support will be important to minimise the impact on team dynamics and patient relations.

3.4. Paramedic perceptions of BWCs' impacts on work practices

3.4.1. Impact on team dynamics

A similar picture is shown in Figure 28. The majority (58%) of respondents had a neutral perception of the impact BWCs may have on paramedics' team dynamics; 34% saw a positive/very positive impact, whereas only 8% had a negative/very negative view.

Figure 28: Perceived impact on team dynamics of using BWCs



In assessing team dynamics, paramedics discussed three types of callouts: those that were clearly high-risk where the police would almost certainly be in attendance, an ambiguous middle-category

where the risk was unclear, and those where the callout was expected to be safe, such as in highly populated public spaces like shopping centres. This middle category of callouts is the Trojan horse of paramedicine work; they may appear neutral and non-threatening but can quickly and unexpectedly become violent, and it was in the context of these ambiguous mid-range callouts that BWCs were seen as most valuable in enhancing occupational safety, as a paramedic (INT_26) describes:

> *I think it's in the middle categories where I've found it really useful, where there hasn't been anything in the notes that warrant us calling the police. But there's just several layers of unknown elements that could possibly put us at risk.*

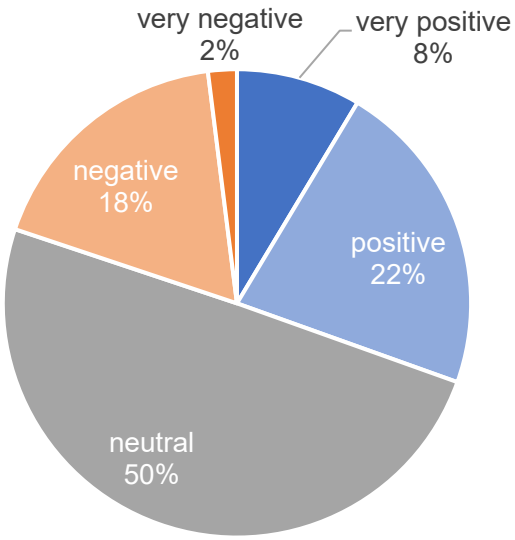
Mundane, seemingly routine callouts could pose a risk because of their mundanity, as paramedics are more likely to attend without police support than clearly high-risk jobs. This heightens the potential for something to occur once caring for the patient is already underway, making a quick exit from the scene in the event of occupational violence, much harder to execute, as one paramedic (INT_27) describes:

> *Then we're in a difficult situation where we're on scene, we've already engaged, we've knocked on the door, and now something unpredictable is happening or has happened, and now the police are still going to be five or ten minutes away, and that is what I find to possibly be the most dangerous jobs.*

3.4.2. Impact on the relationship between paramedics, patients, and the public

Another essential question referred to the impact of BWCs on the relationship between the paramedic frontline workers and their patients. Figure 29 demonstrates that half the respondents perceived the impact as neither positive nor negative; 30% believed there was a positive or very positive impact; and 20% saw it as negative or very negative. As mentioned above, the reasons that 50% of paramedics were undecided on this question may stem from patient experiences that were either positive or negative when using a BWC or their perception of the advantages and disadvantages outlined in Section 3.6 outweigh either position. Also, for some respondents, ‘neutral’ may mean that BWCs do not influence their relationship with their patients.

Figure 29: Perceived impact on the relationship between paramedics and patients using BWCs



BWC use does not occur in isolation – participants in the current study highlighted how patient and bystander attitudes towards the cameras were influenced by two key factors: a growing sense of surveillance among the general community and police use of BWCs.

Paramedics perceived that members of the community and the patients with whom they work, are increasingly less concerned about being filmed given the ubiquity with which technology is now used to track members of society, both in public spaces and online, especially on social media. The panopticon of observation creates a climate in which camera usage is normalised and thereby is more widely accepted among the general public, though vulnerabilities, fears, and concerns were still routinely noted and addressed by paramedics interacting with both patients and bystanders while responding to a callout. Particular privacy concerns may also arise in healthcare contexts such as paramedicine. Interestingly, one paramedic (INT_5) described occupational violence as the gorilla in the background, a reference to a famous experiment wherein many observers fail to notice an unusual feature to the scene (e.g., the gorilla) despite it being eminently visible:

> *It's the gorilla, the gorilla in the background of a scenario, and how many people see the gorilla. So I might see it because I've got so much experience in that kind of environment. But many other people won't see that. So the dynamic environment is probably our biggest problem. The body worn cameras is not necessarily the panacea to that problem. However, it goes a long way to mitigating some of the problems that come about because of that dynamic environment. We're using it in the context of violence in the lives of paramedics, so whether it's occupational violence, assault or whatever…The fact that street cameras are everywhere nowadays and they provide a huge amount of information that can give the contextual knowledge necessary for understanding of a problem, it's the same deal for us.*

The growing frequency with which members of the public are likely to be caught on camera in almost any public setting had a normalising effect on how paramedics felt about using BWCs. This also made it easier to mention the technology to a patient when on shift, with one paramedic participant even noting that some patients felt special rather than threatened because of the presence of the BWC.

Critically, past experiences with patients also played a role and for those paramedics who operated in mental health contexts, flexibility in the deployment of BWCs was considered pivotal given the ways in which certain mental health concerns may result in a heightened sense of paranoia. BWCs need to be deployed sensitively with high-risk patients, who may be desensitised to BWCs due to past experiences with police or, in some instances, may be highly paranoid due to mental health concerns.

> *I haven't really seen anyone be de-escalated or escalated and made more aggressive by it as such. Yeah, so on the escalation side – I think de-escalation, possibly more likely. I think often it's the same type of maybe aggressive, antisocial type of patient that will either go down either route of becoming, escalating or de-escalating. Often those patients are used to having a camera in their face and not being able to escalate or de-escalate. Often those patients are used to having a camera in their face anyway because they have frequent run-ins with police, and often police are already there on scene with cameras, so I think it's a little bit normalised anyway. Yeah, I think potential for de-escalation wins in that balance, yeah. (INT_27)*

3.4.3. Paramedic identity

Paramedics frequently positioned their own role and functions in contrast with those of the police, particularly when it comes to the use of BWCs. To a large extent, the police, as the primary and early users of BWC in NSW, provided a framework for paramedics to conceptualise the role and function of the cameras. Police were also often positioned as an alternative occupational safety device to a BWC; given that BWCs have been widely used within the NSW police force for some time, police camera usage has set the standard to which paramedic BWC usage is compared.

The police comparisons were not merely technological. Some participants contrasted BWCs with the practice of standing down until the police could also attend a callout, positioning both the presence of police *and* BWCs as safety de-escalation strategies. Some viewed BWCs as something to be used in tandem with police support, while other paramedics were concerned that using BWCs could give a false sense of confidence and assurance to paramedics, increasing the likelihood that they might attend callouts that they otherwise would hesitate to attend (and in some instances, without police support). Others feared their colleagues would pay less attention to their manner with patients and be emboldened to ignore risks as a result of wearing BWCs. Yet many participants described how BWCs actually facilitated communication with patients, and could be a part of trust-building, rather than a threat to the process.

In analysing paramedic responses and perceptions of BWCs, three categories of BWC engagement, can be identified. As described by one participant (INT_27):

> *People are either for it, like I am, and maybe – this isn't something I freak – we don't sit around and talk about body-worns. I really haven't much anyway, just with individual people along the way. But I think three buckets, people are either for it, like I am, they're indifferent and don't care either way. They just keep doing what they've always been doing. Those people don't sign it out and they also don't care if other people sign it out. They just don't really think about it. Then there's people who are against it. I find the people who are against it, in my experience, they don't – they're very cynical or suspicious of it. They probably haven't done the training. They don't know that it's actually targeted occupational violence. They're people who are maybe a bit burned out or cynical with the ambulance service generally. So they think this is just another waste of money and a way to screw us, basically, if we do something wrong. What, you think that they're not going to use that evidence against you?*

For some, BWCs were seen as a simple, straightforward unproblematic addition to their uniform and repertoire of defence mechanisms in the event of an incident and consequently were used routinely. For these paramedics, questions still existed about the benefits of the BWC, with some participants noting how they had not yet observed the actual benefits of having footage following an incident, while some were also quick to note that the benefits of the BWC were as much psychological as tangible. However, on the whole, these paramedics either did not express trust-related concerns with their employer or saw the use of BWCs as immaterial to any workplace related concerns they might have. These paramedics were committed to using BWCs and saw the cameras as an extension of their kit.

The second group were those who engaged with BWCs on a non-routine basis. These were the swinging voters of BWC usage, who, ahead of a potentially high-risk weekend night shift, or with adequate time before a shift, were likely to use the camera but would not consistently use them. Inconsistent BWC users cited various reasons that influenced their decision-making. Some had concerns about the directionality of surveillance and noted how both paramedic and patient are observed, while others highlighted how one mechanism designed to improve wellbeing and safety (e.g., BWCs) could intersect with another (e.g., black humour and collegiality). As one participant (INT_7) describes here, paramedics generally become more self-conscious while using BWCs:

> *It makes you think about what you say and what you talk about. I know that I've turned it on before and then you think about what you say, and then you've forgotten that you've got it on and then you start talking. You go, oh, shit. But that conversation's just been recorded. Because we have our jokes and stuff that we say for ourselves. So, in that sense, yeah. When it's on, I guess it's just – I think initially when you turn it on, you're conscious of, you are being recorded. So, I think it does make you just think about what you're doing a bit more. Not saying that we're doing anything wrong, but I think it's just a natural instinct to go, well, I am being recorded so I need to make sure I'm being professional and so on, I'm doing things right.*

Importantly, even though the time required to sign-out a camera may be measured in minutes, these minutes are often understood in the context of the life-and-death outcomes with which paramedics deal, as this participant illustrates:

> *…every time we allocate more time, we're delaying the time it takes us to get to emergency. So, we're kind of saying, are we willing to accept somebody not receiving the care that they need and deteriorating further to sign out a camera? So, the position of our executives is they will never accept that. They'll say, look, if there's an emergency case, as an organisation, we need to be doing everything that we can do to get to that patient as quickly as possible and everything else can wait. (INT_11)*

In all cohorts, but particularly for these agnostic BWC users, social facilitation could be impactful. Participants noted how social facilitation, whereby the attitudes and behaviour of one employee influenced the attitudes and behaviour of another, could work in one of two directions, and did not always come from management, though the attitudes of those in management roles were also noted as consequential. One paramedic (INT_11) described the influence of this social contagion effect:

> *There's a couple of people who are negative and potentially influential people that have been in the job a long time and have that level of influence over junior staff who perhaps don't agree with them, and it just spreads.*

Social influences are not just confined to within paramedicine. The use of BWCs as a management tool within policing has potential ramifications for how BWCs are viewed within paramedicine:

> *If the police have made a wrong move like drawn their weapon when they shouldn't have, then they will actually use the footage to manage their staff which is perhaps, where the crossover is between us and the police but that will aways carry over. I think the police are just used to having their footage pulled and it's a lot easier, I'm led to believe. I'm not sure, but I believe their local managers can pull footage from their devices fairly easily and there's not the same level of governance around it than there is for us. (INT_11)*

Participants noted how positive attitudes towards BWC had less general impact than negative attitudes. For these intermittent BWC users, the attitudes of their partner on shift, as well as the time pressure of the shift, could influence whether they decided to deploy a BWC. Non-routine BWC users were more likely to deploy the BWC when on a high-risk shift (e.g., Friday or Saturday evening shifts). A third cohort, who did not participate in the study directly, but whose views were represented by other paramedics, were those were unwilling to engage with BWCs at all. These paramedics were generally understood to have high levels of mistrust towards their employer. These paramedics were described as having major concerns about the collection and use of BWC footage and understood the cameras as a professional liability for a paramedic who may be performance managed or even litigated against as a result of what may be revealed in the footage.

Importantly, while attitudes to BWCs are often understood as indicative of the paramedic as an individual, with one manager citing how some paramedics will always be negative, it is critical to note that the nature of routine callouts from one station to the next, as well as cultural factors that vary across stations, influenced attitudes and behaviours. This impacted attitudes towards BWCs, as illustrated in the following:

…our area is probably known for, there's a lot of alcohol, a lot of drugs. Friday and Saturday nights are generally alcohol. Because, yeah, people drinking to excesses, out partying in the city. That presents some challenges at times. We get a lot (of) drugs as well, a lot of recreational drugs. GHB's a big one in our area. That renders patients unconscious. Ice is a big one, as well, which we all know that can have varying effects on people. Yeah, I guess in the context [inaudible] the cameras and everything, safety is obviously big. I think with all the alcohol and the drugs and so on in some of the places that you're going to, that's a bit of a challenge, as well. Yeah. (INT_7)

Building trust in paramedics will not come from assurances about the uses of the BWC but in creating a baseline of trust and communication between paramedics and the organisation.

Look, I think it's a lack of faith in the organisation as to what we will do with that footage. Perhaps a little bit of paranoia there if we might get captured, as soon I activate this, then they can use that against me for anything they like be it performance management or the clinical treatment of the patients or they're spying on me and listening to my conversations. I think there's a level of probably distrust in how the footage is used. Around the dip samples as well. That is sometimes a little bit of contention there that we'll dip into just any activation of that individual's camera so they could be saying or doing anything at that point in time and we would still dip into that. (INT_11)

3.4.4. Technical and practical challenges in implementing BWC

BWCs can create greater accountability but in some instances, they also heightened a paramedic's sense of responsibility. For instance, some paramedics reported losing their BWC under the car, while as noted earlier, the differences between police and paramedic BWC technology meant that members of the public, as well as nursing staff with whom paramedics interact on shift, routinely assume that paramedics were filming when this was not the case, adding to the social and logistical challenges paramedics faced given police BWCs are treated as the benchmark. Some of these matters may not be serious, but can nonetheless be a significant disincentive to engagement, as one paramedic describes:

The rest who did [not use the BWC], the reason why they leave it in the car is because they accidentally kept on pressing it all the time and they'd have to write out incident notes for it. They just found it too annoying to do that. (INT_19)

Some practical issues were highlighted, which themselves created a cognitive load for paramedics. These included the ease with which a BWC may fall off one's uniform, particularly given the clips used to hold the BWC in place were not consistently effective, as one paramedic noted:

I wear a zip-up over a shirt which is already quite heavy. To have a clip-on camera that actually drags it forward, it became more of a hindrance when I was wearing it constantly… (INT_22)

Others noted that the BWCs were incompatible with special operations uniforms or with equipment used by specialist and motorcycle paramedics.

Particularly with our SOT [special operations team] role, they don't attach to this uniform in any reasonable way. I've ended up getting a little harness that I've put on that I wear with a camera on. In addition to other things that I have. However, I've already lost one of the cameras doing SOT stuff because they just don't attach particularly firmly to it, so the mechanical attachments

> *themselves. If they had the police attachment or something like that, where it actually locks in, would be more beneficial than the clips, at least with the rigorous activities we sometimes do. … I suspect it's down the bottom of a cliff somewhere. It's just I've not noticed it.* (INT_X, number changed to prevent identification of the participant)

Similarly, another paramedic (INT_8) states:

> *The cameras themselves don't lend themselves to be favourable if you're wearing it all day. It's like having a bit of a brick on you and if I was to – there's design flaws in this. So, the – they say, okay, let's pull a lapel like onto your shirt but the lapels are really quite short so the Velcro, once you've put your epaulette on are only holding on by, I'd say, a centimetre. So, if they put it on, it's pulling off particularly for young ladies, they don't like it on their zip at front because every time they lean over it pull their shirt forward. So, therefore there's a few things in that that I think, I believe that it has huge benefit and huge utility. I think it's a huge – it's a great deterrent and it also holds our paramedics to account but it's just… making them operationally favourable as being probably a little bit challenging.*

On a practical level, the ergonomics of police BWCs created administrative and social labour for paramedics who were routinely questioned about whether they were filming as the display settings and function lights vary across the BWCs deployed in the two occupational contexts.

As one paramedic explains:

> *I've walked in and they've recognised the flashing red and wearing black and looking like a copper quite often. We do sometimes seem a bit more confrontational, but I've yet to have anything that's caused me problems as far as that goes…. I do find that the police will see, even on our standby mode, of course, it looks similar to their activated mode and their professional manner may change a bit when they see our cameras on if we're walking in on a scene like that. I haven't noticed anything significant with patients except the ones that are very familiar with the police and know what the flashing red light usually means.* (INT_2)

While another noted that it was not only the public or police who expressed concern, but also colleagues in hospital settings:

> *So, quite often they'll see our camera and think they're being filmed. But no one's complained. But in the hospitals, yeah, I walk through in the hospitals with it turned on but not filming, in standby mode. I've had nurses question it. They say, are you filming, why are you filming? I just explain that I'm not filming, it's on standby.* (INT_7)

Some participants identified challenges with docking the cameras to ensure charging and uploading of footage. INT_2 notes that checking the cameras has become a part of his administrative routine:

> *I do find that the cameras are regularly not docked properly, so I find it's just become part of my daily thing to go in and have to re-dock five or six cameras at a time. … Yeah, not being – they don't seem to tag as being in the dock, so it'll list that we have four cameras or something and that six or eight are out and it won't be quite accurate to reflect reality. But that's nothing, neither here nor there.*

This also links in with paramedics requesting more time to complete administrative tasks at the beginning and end of each shift, as one participant (INT_15) illustrates:

> *The other challenge we have is that there's – paramedics have a lot to do at the start of the shift which has probably come up a number of times. In terms of getting the car in a state where they can respond to a job, it takes a good 10 or 15 minutes and often that time just isn't available to them when they come in because there's an outstanding case in the queue. So, if there's a*

lights and sirens response, then the dispatcher can just say to the crew, look, I'm sorry. I know you need to check your car, but I can't give you that time today because there's somebody having a stroke or someone having a heart attack. They can't wait 15 minutes for you to check the car and for you to sign out the camera. They need an ambulance.

This view was supported by INT_5:

One of the things that we are is time poor. So if the ambulance service – which comes back to one of those organisational problems – the ambulance service is saying, as soon as you get there, we want you to go out, despite the fact that you've got a mandatory 15 minutes to sign out your drugs, get your car ready and everything else, no, we're not going to give you that 15 minutes. This is not once in a while, this is every shift. Certainly you walk in, they want a piece of you, which is fine. We're paying you from then. I understand that, and I understand the need – well, I understand that. But they are trying to save time, and their time is precious. Because of the demands on that time, particularly in my area, they don't have that much to waste, and so they just think, well, this is the new thing, this is what I've got by without before. So I just won't even bother about that. My priorities are my drugs. It's the sexy things, my priorities are my drugs, I need my drugs, things that I can do stuff with.

Several paramedics expressed concern at the battery life and noted that the battery did not last all shift if the camera was in use, even in standby mode:

My current use, I don't have it on standby the whole shift, but I was, there, for a while. When I was, it wasn't making its way through the whole shift. It would come close, but it would definitely go into the – I think it goes orange or something and then – I can't remember having got that far down. But I know at one point, there, that I was having it on standby the whole shift. It wasn't quite making it. Yeah. I think that's probably – part of it was I started to turn it off in between jobs, as well. (INT_7)

As a result of this, some paramedics stopped having the camera in standby mode, which led to the added cognitive load of having to remember to turn the camera on during emotionally charged situations:

I remember when they first came out, I would leave mine on standby and they wouldn't last a shift…There's not enough power in the battery, so I quickly learnt that that wasn't going to be a good idea. Then of course then you get to the other side of it where you have to actually have that muscle memory to turn it on as the situation is evolving. (INT_6)

Other paramedics adopted a more structured approach of activating standby when entering callouts and deactivating once establishing there was no threat.

So, we tend to kind of turn it off, put it aside when you're not on a job, turn it on, put it on the standby as you're walking in, you come back, everything's okay, you might leave it in that form. (INT_25)

There were several variations on this strategy but all who discussed this noted it was necessary to preserve the battery life.

But one of the things after I've assessed for risk and decided that there really isn't any, one of the things I might do is just turn it off to preserve battery, which I don't think is – probably not recommended in the training. (INT_26)

Paramedics reported that generally the process of recording was quite straightforward, but it was easy to forget if you didn't use the cameras regularly:

The only thing that took a bit and it sounds so silly now because it's easy to do, was to get it to start recording once it's in standby. I remember on one job, it's probably a very funny recording

> *to watch other than the patient yelling in the background, is me and [my crewmate] we were trying to work out how to turn it on. I've turned mine on and she's like how do I turn mine on? I'm looking at [her] and fiddling with her camera. It took a little bit to go. It's just hold it for two seconds but we were just holding it and then letting go but it has to be one, two and then let go. Yeah, that's the only thing we had trouble with.* (INT_21)

Others discussed how they had accidentally activated the camera and how that had made them more careful in where they carried the camera:

> *I have accidentally turned it on in my pocket, it was recording, so I don't do that anymore.* (INT_3)

Some paramedics were concerned that the recordings would be accessed for other reasons, such as to review clinical performance:

> *The concern that the recordings will be used for clinical review is a massive barrier. So, engaging with paramedics, enabling them to have this information that we're not using the footage for those reasons, that's the biggest challenge. … We continue to put that messaging out there, it's all through the training…no we can't use it for this, it's only used for occupational violence, no one else is reviewing the footage for clinical review.* (INT_9)

These concerns extended beyond the organisation with staff citing concerns over legal action:

> *Then there's another subset of people who say, well if I record any recording of everything that I do, then it's going to be used against me by the HCCC. I'm going to go to the coronial inquiry and they're going to ask me about the footage and all this sort of stuff.* (INT_14)

One manager discussed how these concerns were addressed and talked of the benefits of directly engaging frontline paramedics in the occupational violence incident review process:

> *I would invite a paramedic from each site to come in and they would sit in on the what we call our occupational violence incident review group. Once a month we meet, and we will review a random sample of the recordings from the month prior and the purpose of that meeting is just to confirm that the recordings that are taking place are in accordance with the legislation. Allowing paramedics into this governance group and to see the conversation that's happening, and they can see clearly that we're not having clinical conversations…it's just to confirm that the legislation is met, and that the procedure is also being met.* (INT_9)

One paramedic noted how patients were also concerned over who could access the recordings:

> *I definitely think for the public perception side of things, the biggest barrier is the concern of, is it recording all the time and how safely is that footage then going to be stored if you do record. How do we know that that is safe security wise, especially with these market people getting into [laughs] everyone's personal records.* (INT_9)

Another issue raised was in relation to the categorisation of incidents:

> *So, when I came back from my time off, I noticed that you go online now. You used to get an email about what the recording was, whether it was an assault or accident or what have you. Now, you've got to log into that system and do it. Yeah, maybe just a little email to remind you that you need to log in and do it. I think I did get an email the other day saying I had one in the system that I hadn't classified. It was from a month ago, and I couldn't remember what it was from a month ago. I know when you plug it in – when you get back from shift, you put it into the dock and it uploads the video. I don't think it sends you an email to say, hey, you've got a video here that needs categorising. Maybe it does, I'm not sure. But I don't think it does, and I think if it had something like just to give you a cue every couple of days, maybe every five days until you log in and categorise it might help, as well.* (INT_7)

Most paramedics found the uploading to be a simple process and were satisfied with the support available:

> *I think there's a manual of how to upload or [download] next to the camera station here, so I just consult that. I think I've loosely spoken about it with the lady that's employed by New South Wales Ambulance on the body-worn project. We had a long discussion about it a few months ago and she briefly told me what you do. But yeah, I'd just figure it out on the spot. That wouldn't be a barrier for me to record or anything. Yeah, worry about that later.* (INT_26)

However, some feedback to NSWA's WHS unit requested simplification of the categorisation process:

> *I have attempted to log in this morning to classify this footage. My login did not work stating that my username and password is incorrect. Last time this happened, I was given a password, logged in and the case just simply wasn't on the list of the 18 that I could see at the time. The 2 seconds of footage is clearly a mistake without any intention of recording. I am more than happy for someone to classify it as such. I was religiously signing the cameras out every day but following the last email to classify this information stopped. I figure if it is so hard to classify the information when I accidentally hit the record button and need this amount of follow-up, plus having my manager emailed to involve them as well, then it is easier not to have it [BWC] on me. … I do not wish to receive any further follow-up on this or continue participation in the study.* (Feedback to NSWA's WHS unit)

Others commented how the process of uploading and categorising could be quite time consuming:

> *I think from memory, there was a fair bit to the [IMS], so we had to do the upload and then do the IMS at the same time, so I thought it was going to be a five-minute job and it turned into a lot more than a five-minute job. I understand there has to be a process, but there was a fair bit to write. I'm quite passionate about them and I really like them, so I was happy to put in a bit of extra time, but I know a lot of people aren't as passionate or just kind of...Yeah. They definitely wouldn't put the same amount of time into reporting or they'd go, I'm just not going to click record because I can't be bothered doing the IMS, or the reporting process. I think maybe that's a bit of a negative is yeah, the time taken to upload the data.* (INT_1)

One paramedic suggested ways to prevent footage being lost if the device was damaged:

> *I would like to see that that footage uploaded into real time. We'll get on to {Elon Musk] and we'll get him to give us some Skynet technology, so we can upload this stuff directly as it's being recorded. That would be ideal, because that way if the camera is lost, the footage isn't lost.* (INT_5)

Staff also need clarity on how the sign-out process for BWCs interacts with their rostering and extended periods of duty as noted in this feedback to the WHS unit:

> *Can I take the camera if I'm on a sot car? And if I can, can I use it for multiple days and then dock it? … Take the camera at the start of my first shift and then I might not go back to … because I take the car home on call until 4 days later at the end of my last shift.*

RECOMMENDATIONS

- In addition to training, **technical support** and problem-solving assistance with the device should be provided.
- It should be made clear that much nuance and context are lost in BWC recordings.

- Appropriate wireless or satellite technology could be used for direct uploads of the recording to the cloud to prevent the loss of footage.
- NSWA should explore options for BWCs to be a standard item in ambulance equipment, with information collation linked to ambulance identifiers rather than individual officers. This may require reviewing legislative provisions surrounding individual recording processes and privacy.
- NSWA should review their technical specifications in any procurement documents to ensure that the technical issues raised by paramedics are addressed in any service-wide implementation program.

3.5. Organisational approach to introducing BWCs

3.5.1. Organisational culture and mistrust

A potential obstacle to the BWC awareness program is distrust in the organisation (organisational culture) and a lack of support from some frontline management (personal culture) to drive the adoption of BWCs. Both organisational and personal cultures are related to team management and vary across stations, resulting in fluctuations between stations. Particularly in larger stations, people reported frontline staff were often disengaged and disconnected from managers and the organisation. Also, some frontline staff felt unsupported in dealing with OV cases and decided not to report them due to organisational culture, also presuming OV would be part of their job.

Another cultural issue may be related to the age and experience of staff; young staff are seen as not confident enough about the dialogue around BWCs to contradict “older and grumpier and bigger” staff [INT_23] because they felt unsafe. Some staff, however, emphasise that staff generally want to ‘play’ with BWCs as tactical kits to get to know them. In particular, young clinicians would engage easily in BWCs as “kids like carrying a piece of kit” [INT_6]. In general, BWCs seem not to impact collaboration between colleagues as staff are well educated on how BWCs are turned on and off.

A main concern emerged around the use of BWC footage. Officially, staff were instructed that BWCs were not used for any clinical evaluation or auditing but only for OV purposes to influence patients’ behaviour and de-escalate aggressive behaviour, also using communication. Such a use of BWCs corresponds to the ‘Operating Procedure’.

> *A lot of people were concerned about … the service will take the footage and then use it against you if you do something slightly wrong. But it was quite clear in all the training and all the forms*

> *that we signed that that wasn't the case, and it would only be subpoenaed for very specific certain reasons. I wasn't too concerned about that.* (INT_1)

However, because of misusing or not using the camera, it is unclear to some staff what impact BWCs could have on de-escalating OV situations. These frontline staff did not perceive BWCs as a safety device but rather a tool to collect and record information for 'someone else'. As a result, they refused to engage with BWCs as they did not trust the organisation not to access the footage and felt that they would be carrying around an evidence-gathering piece of equipment.

> *I was under the impression that the footage could not be viewed unless ordered by a court and then only used to provide evidence to support paramedics. Is this still the case? If anyone is viewing the footage without court orders, I don't think I will be using it anymore.* (Feedback to NSWA's WHS unit)

Thus, some frontline staff expressed concern about surveillance and that the organisation would use BWC footage in performance management and other disciplinary processes. One key informant stated, "BWC recordings could also be used as evidence to inform internal investigations into staff behaviours" (INT_28). This statement illustrates that there is some confusion among staff in relation to how BWC footage may be used for performance management processes, serious misconduct procedures, or internal and external complaints processes.

NSWA may need to consider the best methods for clearly communicating the limitations to the use of BWC footage to staff. This may need to be incorporated into strategies for cultural change and engagement across the organisation.

3.5.2. Policies and procedures

An initial version of the 'Operating Procedure' was written in November 2019, introduced during the first BWC trial phase and updated several times during both implementation phases. Despite this policy document, some frontline staff reported unclear procedures during the introduction of BWCs. Improvements in Phase 2 may have led to an increased uptake.

Some participants identified that BWC footage could be used for training processes although it should be noted that according to the 'Operating Procedures' this could only occur with the permission of the staff involved. The procedures note that such footage could be valuable for training staff in managing difficult situations and identifying elevated risk, as it may offer real-world examples of best practices in risk assessment in a safe setting.

The BWC 'Operational Procedures' provide that footage may **only** be accessed in cases of serious misconduct, such as a serious sex or violence offence, reportable child-related conduct, professional misconduct of a level that would result in suspension or cancellation of practitioner registration, or a criminal offence. The police may also subpoena BWC footage in criminal charges, although it should be noted that the police do rely on their own recordings and would seek NSWA

recordings only in particular circumstances. Health regulation bodies such as AHPRA or HCCC may access recordings in cases of official complaints.

During the BWC trial there were no requests for access to footage in relation to internal complaints, or for AHPRA or HCCC complaints. On a small number of occasions footage was accessed for use in criminal proceedings where violence was perpetrated against paramedics. In these cases, the availability of BWC footage led to perpetrators lodging a guilty plea and to a more rapid resolution of the issue.

As noted above, some staff were unclear whether the footage could be used for training purposes and believed it should not be accessed for education or training purposes. Hence, it is essential the 'Operating Procedures' provide a consistent and clear message to staff on the use of BWC footage.

3.5.3. Training

NSWA realised from early stages that introducing BWCs must be accompanied by appropriate internal training. The initial training program consisted of a one-off face-to-face element with participating frontline paramedics focusing on the technical elements of how to use the BWC, what the lights meant, when to activate the camera, and legal responsibilities. Subsequently, BWC training of newly arriving staff at each station was provided by a 'Champion' frontline staff cohort or other users on an informal 'on-the-job' basis (INT_28).

After a review period, the training program was improved, and subject matter experts visited stations and provided face-to-face training to large participant groups. Also, an online training package was developed with a series of seven-minute modules, including written material and videos on how to use the BWCs. These modules help consolidate the learning, offer refresher training, and introduce frontline paramedics before their posting to trial locations. Regular interaction with paramedics of the pilot stations allowed answering questions, receiving feedback, and this contributed to improvements to the training program. Frontline paramedics cannot use BWCs until the successful completion of the mandatory training. The creation and maintenance of a database of those trained ensures an overview of who can use the BWC and the training needs.

Initially, a written manual was provided, equivalent to the later online package stimulating self-directed learning. Frontline staff generally have little time to read through a booklet and prefer the interactive online module as a quicker way to get through the key points. The online training modules include operational considerations (e.g., how to affix a BWC to the uniform, how to activate/stop the camera, upload data and use the program to classify and categorise footage,

when not to use BWCs, and the risks associated with using them), legislative requirements, and the ethics around BWC usage.

Personalised training modules containing success stories explain the purpose of using BWCs to protect people serving the community, hence, make frontline workers feel BWCs are for the benefit of them and their families. The training also provided realistic expectations towards BWCs – before the training, some staff thought BWCs would automatically stop OV and became sceptical as OV continued to occur despite wearing the cameras. The training focused on ensuring that staff understood the key role of BWCs was to act as security cameras protecting frontline staff in terms of preventing assaults or documenting them, however, they would not completely stop the occurrence of OV. Successfully answered quizzes at the end of the self-directed online training authorised staff to receive a certificate of completion.

POSITIVE FEEDBACK ON BWC TRAINING

Many research participants felt that the in-station training was effective. These participants found they were well-trained regarding BWCs; they understood the key points, which are the activation process, the announcement protocol towards patients, and the related legality under the Surveillance Devices Act. This legal aspect made the training most valuable; participants mentioned that some novice staff were not aware that it is illegal to record someone in emergency circumstances without an exemption. One participant stated:

> *I found the training to be completely – covered everything that I needed to know in regards to it [BWCs]. I had no questions on the training. I was comfortable using the cameras after it.* (INT_2)

Enthusiastic participants found that *"the initial sort of welcome package or the online learning is fine"* (INT_17). In addition to the online training, the on-station face-to-face component was well appreciated: *"The online training was first class. Having the OV team come down from time to time, to answer any concerns or questions was perfect"* (INT_14). One frontline paramedic (INT_1) emphasised how helpful and easy the training was:

> *The [training] team was great. They came down from Sydney and they spent a couple of hours over two different days trying to capture as many people as they could. … the online components were more than clear enough, and we can still access those online components. Training for it has been quite easy-breezy. It was quite helpful.*

Senior staff also expressed confidence that the training was effective in engaging frontline paramedics and equipping them to be confident in the use of BWCs: "The more engaged we are with the paramedics, the more training we give them … the more confidence they have in ... using them [BWCs]" (INT_9).

The publicity around the BWC training made frontline staff remember it better than any other training. Some participants prefer online training, however, value the option of asking questions to experts during the face-to-face training, for example, what happens to the footage. The question around footage emerged as a key concern among participants. Some staff highlighted the trainers assured them there was no management oversight of the captured evidence, such as investigations into frontline staff's clinical practice, which could result in performance management or disciplinary action, but that BWCs would only be used to gather evidence of OV, and that the footage was secured.

CRITIQUES OF BWC TRAINING

One participant speculated that the initial introduction of BWCs in Phase 1 may have been rushed due to external concerns, such as budget expenditure and that therefore BWCs were poorly implemented.

> *Everything is patient first. Patient-focused, patient privacy, patients' concerns need to be addressed. Now to tell them [frontline paramedics] to stick a camera in someone's face, yeah, my thoughts are it was very poorly implemented. Perhaps even rushed due to external concerns. … Sometimes you have a budget and you're being told to spend a budget … There may have been those concerns around that as well but yeah, it [BWC implementation] wasn't set up to obtain data well. It wasn't going to answer many questions.* (INT_10)

Indeed, some frontline staff were less enthusiastic about BWC training during the initial phase and reported there was no formal BWC course available to them and that the online training at their station started only about a year after the initial implementation of BWCs. While it was valued that during the initial rollout, subject matter experts were at the station for two days to troubleshoot, a thorough long-term follow-up beyond 'floating' emails was missed. A reason for scarce face-to-face training is seen in the geographical vastness of the area serviced by NSWA, which may impede trainers from frequently visiting stations to complete training.

Some frontline staff from both trial phases were critical that the BWC training was reduced to explaining the camera's buttons and when to start the BWC: "From memory, I think it [BWC training] was just an overload, an overlay of you know these are the buttons" (INT_17). Similarly, they stated the training just instructed, "This is what each button does and then we practice it [use of BWC] at station" (INT_21).

In addition to how BWCs operate, staff would have appreciated understanding when to use it.

> *I think that on top of the like how to actually operate the camera, which I think is a given, the thing I would have appreciated explained, in order to like for me to engage with them more, is I think maybe an understanding of instances to use it. Or a way – or at least a vision or a plan of how they wished to try to integrate this into daily operations.* (INT_22)

In terms of the online training, it was criticised by a frontline paramedic as being short, dry, and wordy, and that it can be clicked through quickly.

> *I don't remember how long it took me, not very long. It wasn't very thorough. Because it's a My Health Learning course, you get pretty good at clicking through those quickly if you have to. We get a lot of courses we have to do, so it just becomes another one you just click through. … There's something there with it, the training – the way it was delivered, the training through a My Health Learning course, they're always dry, they're always wordy, it's always death by PowerPoint.* (INT_15)

Some participants from both trial phases complained that "the training was very limited – someone turned up to a station with a box of cameras, gave people a bit of a chat, and said go for it" (INT_10), and that it was abrupt and jarring: "Although it [BWCs] was rolled in with some warning, I felt that maybe the introduction of it was quite abrupt and rather jarring" (INT_22).

Others critiqued the clinical focus on paramedic training and said that very little risk management training was provided. As a result, there is potential for staff to neglect a thorough risk assessment when entering a home.

> *Probably, maybe – yeah I mean we're so – our training and our approach is such a clinical focus that other things tend to be down in the wayside a little bit. A lot of times you'll suddenly find yourself in the middle of a situation where there were little pointers to say, you know, don't enter, and a lot of kids will just enter a flat without having a look around. I mean, you know, most flats have a kitchen and every kitchen has a knife.* (INT_6)

Some staff were concerned that the presence of cameras might result in a range of behavioural responses, with both escalation and de-escalation of violence or bad behaviour a potential outcome. It was generally acknowledged that the importance of de-escalation techniques is often underestimated. A hurdle for using BWCs, particularly for trainees, may be a lack of confidence in verbal de-escalation skills to influence a patient's behaviour. Some frontline staff only received 'OV training' on starting with NSWA. The following quote emphasises that de-escalation training is impactful and that it should be combined with further soft skill development, such as communication training:

> *They showed us a perfect example of de-escalation which – like it was brilliant. It was great. It was like it had been scripted. After seeing that, I was trying to tell crews, this is what it's for and it does work, and it can have this effect if used correctly with our communication skills… But … maybe they don't have confidence in their communication skills.* (INT_27)

Some frontline staff identified that verbal de-escalation language has its limits and that if paramedics continue to feel unsafe, then both should leave the scene because "there is no point in de-escalating an unsafe situation" (INT_3). Others reported that the latest mandatory training they had with NSWA did not include de-escalation. One frontline staff emphasised their de-escalation

skills came from previous disability support work. Others could not remember whether de-escalation was covered in NSWA training or not. However, some staff mentioned that recently introduced wellbeing courses integrated de-escalation talks, risk assessment, and escape plans. For experienced paramedics staff, “the safety culture and the de-escalation culture is in front of mind” (INT_23). For them, the BWC training was sufficient: “I just grabbed the camera and learnt how to turn it on and off, yeah that’s fantastic, let’s go” (INT_6). However, newer staff may be unable to work things out alone and need more training: “I think the ambulance service could implement some more de-escalation training maybe at an MCPD” (INT_21). Besides more de-escalation training, also more situational awareness training is suggested, given that experience is a decisive factor in managing risk and OV. This type of practical knowledge, however, is not easily transmissible through standard training mechanisms.

Another criticism was the sporadic offering of training; education sessions at the stations are rare and often there may not be regular repeats for newly arriving staff and trainees. In particular, there is a lot of staff rotation at stations. New staff who have not used BWCs can access the online training easily, but there may be no face-to-face training available for them. In these cases, station members tell these new staff informally how BWCs work. Such informal training usually works, however, it also bears potential problems if people teaching misunderstand things.

> *Like we have new people come to the station all the time and generally from stations that haven't had the cameras before, and … we don't have regular repetitions of education about it [BWC]. … we would just … explain to them as best we understand basically to them, which works, but also has the potential for problems if people teaching misunderstood things.* (INT_4)

Further criticisms concerned the clarity of the training, which became a barrier to BWC usage. Although there were some helpful instructions on how to use a BWC in terms of recording and footage categorisation, the training left it to the staff to decide what an ideal BWC application was. Generally, staff were told to turn the BWCs on if they felt they were at risk of harm; however, some participants expressed concern that the training did not clearly define what formally constitutes aggressive behaviour, and what level of tolerance might be acceptable. Many participants remained vague on when the BWC should be turned on or off.

> *I don’t remember it [training] being very clear on the when and when not to use it [BWC]. Okay, it … wasn’t that clear on it. I don’t think it [training] defined what an aggressive scene really was.* (INT_15)

Additionally, there was some confusion among participants about whether there were specific parameters in the legislation about when, and how, BWCs can be used.

> *The course was boring … It just pretty much showed you how to use it [the BWC], how to use the program and a little bit about the legislation behind it and the rationale behind it. (Int_15)*

Although the face-to-face training made the exemption in the legislation around surveillance devices much clearer, some staff members remained hesitant about whether a situation was aggressive enough to turn their BWCs on and how to justify it. As preparation was limited, some staff did not see the benefit of BWCs. Hence, there is potential for future benefits of the training if more detailed guidance and specific examples of good practice are incorporated, also using BWC footage.

> *I think there's some other potential benefits as well in terms of training and education around how to approach difficult or scenes with elevated risk and to learn through shared practice. With being able to use some of the footage in a training and education purpose, I believe, will be – in the future – be able to better prepare our staff in our training and education programs around this risk by being able to go through real-world examples in a safe setting of how does occupational violence escalate, and how do violent behaviours escalate in practice and look at case examples to learn from.* (INT_12)

SKILLS DEVELOPMENT

Interview participants recurringly noted the technical nature of the BWC training and the lack of focus on the personal skill set of being able to diffuse a high-conflict situation. The participants emphasised the importance of approaching BWC training more broadly, including soft skill development focusing on empathy, managing conflicts, and 'reading people'.

> *The hard jobs are the jobs after where the patient isn't that sick and you have to keep your empathy up and try and empathise with them … It's just more so keeping empathy up which is what drains people the most.* (INT_24)

Similarly, conflict resolution is a challenging skill to develop. It means having the awareness and understanding of what happens to a person physiologically when they are stressed and what leads them to escalate to violence. Training in conflict resolution is suggested, particularly for younger or inexperienced paramedics. Training could also support more experienced paramedics who might be experiencing 'compassion fatigue'. A specialist frontline paramedic expressed how individuals develop conflict resolution skills at different life stages:

> *Becoming a parent made me understand that more too because it's very much like having children that can't emotionally regulate that you've got to regulate them, so I sort of compare it to parenting in a lot of ways.* (INT_18)

Difficult situations are rare but can emerge very fast. The staff mentioned a pattern of 'flags', which makes OV predictable and said that paramedics should be trained to pick up such warning signs early to diffuse OV (INT_18). NSWA explains to new paramedics in their initial training during a day dedicated to occupational health and OV prevention what it is, what not acceptable behaviour

includes, and how to react. Some frontline staff, however, reported that training done many years ago can hardly help in dynamic OV situations. Hence, “the major challenges … [for frontline paramedics] is probably maintenance of skills” (INT_17). Therefore, ongoing OV/BWC training is needed.

Some frontline staff complained about peers who do not wear a BWC, do not turn it on, have not read the manual, and do not recognise the various stages of violence and when to turn on the BWC.

> *Oh, I didn't turn it on. Why? Well, I didn't think it was going to get violent. If you're not thinking there's going to get violent and it did get violent, what are you missing? You're missing a fair few clues here. The first one was probably on the MDT in the ambulance. We've said patient aggressive, patient combative, patient violent, or domestic violence or something like that. Police on the way, mental health, drug overdose.* (INT_5)

A specialist frontline paramedic summarised that “the whole project lacks around the actual useful skill set and all that kind of stuff. Other than that, it’s [BWC is] a pretty straightforward device…” (INT_18).

> *I've been working with someone who hasn't got a very good sense of how to read people. So like particularly trainees and stuff, and you try and … can see that they're just saying the wrong things and just poking in the wrong places, and you can see that person getting annoyed and they don't realise it.* (INT_4)

Hence, a statewide rollout of BWCs needs to be backed up with some useful skills, which help, for example, in dealing with resistance from patients.

RECOMMENDATIONS

Given the complex nature of the program, a robust **formal training package is needed** for an effective statewide BWC implementation. Such a training package should contain the following features:

- It should start from the beginning of employment at NSWA and must be **continuing** through a paramedic’s progression. BWC training should be offered as a **recurring course** that staff must do **periodically** instead of a one-off. Short follow-up refresher training could help staff maintain their BWC and OV-related skills and refresh them if they did the initial training long ago.
- If BWCs are to be rolled out more generally to all stations, then training should be **compulsory** (e.g., basic training) with some **voluntary elements** (e.g., advanced training) to provide staff with options.
- Training can be provided by **paramedics who are project officers with subject matter expertise** and does not need to be delivered by technical specialists.

- Emerging knowledge gaps signal that the organisation must take a more supportive approach towards frontline workers in OV matters. For example, it is challenging for staff to remember how to turn on a BWC in an unsafe situation; it takes a long time to build 'muscle memory' around activating a BWC automatically while processing a difficult situation. Therefore, BWC training should be **embedded in general soft skill training** focusing on OV, such as risk management, situational awareness, conflict resolution and de-escalation, and strategies for managing and reaching a better understanding of OV.
- There is a need for a **comprehensive approach to BWCs** as they are not a 'silver bullet' able to fully prevent OV. BWC training therefore should be combined with clear internal communication and revisions of incident reporting. BWC training can also be integrated into existing training programs, such as leadership training and soft skills development (e.g., communication training). BWCs are then used as a backup.
- Connecting in **practical-oriented face-to-face training** with one-on-one or small groups of people is better retained than online learning modules, in particular, to develop situational awareness of risky situations. Such difficult situations need a 'gut instinct' that develops over time and cannot be learned from books.
- Frontline staff should increasingly get dedicated time to do training, check out BWCs and categorise captured footage instead of relying on staff putting in their own time, which is occasionally done. **Online learning modules make sense** for busy staff, however, managers should allow frontline staff to participate in **practical face-to-face training**, such as simulations, which should be organised when there is a reasonable number of staff at the station to prevent having a trainer at a location with no one to talk to.
- **Alternative training methods**, such as scenario-based work, roleplay and storytelling, and peer-to-peer training, allow consolidation of theoretical and technical knowledge and reinforce skills. There is much information, and a two-part session, including theory and practice, may be beneficial.
- Station-based managers should encourage frontline paramedics to do their training. A **training report** allows for mapping out training needs, and people, who according to the database need to do the training, can be approached.

3.5.4. Communication

In collaboration with the NSWA media and communication unit, a robust communication strategy defining communication channels was developed. NSWA used many communication methods to inform all staff of the BWC project aims. Internally, many all-staff emails were sent out, and a

corporate intranet page was set up. Many staff also use internal social media, such as Teams. Video messaging was utilised in on-station televisions and screens, and print media was used to convey information about BWCs. During implementation, post-implementation, and ongoing use of BWCs, a monthly internal magazine is sent to all staff informing them about the project's progress, learnings, findings, and staff feedback.

Communication with frontline paramedics was furthermore achieved via face-to-face or online training, informing participants of their legal rights and responsibilities and the operational procedures and processes for use of the BWC. 'Champions' and 'early adopters' from each trial site volunteered to provide peers with more information or technical assistance. An Instant Messaging group guaranteed direct communication and weekly updates between 'Champions' and the BWC project team. Visits from trainers and managers to the stations significantly augmented staff engagement on how many paramedics were checking out cameras. After a while, staff engagement would start dropping off again. While some people are committed, others may not be willing to engage.

INTERNAL PERCEPTIONS OF COMMUNICATION ABOUT BWCS

Discussions with frontline staff and managers depicted a multifaceted image of BWC communication, ranging between pure optimism (e.g., INT_29) on the one hand and some misinformation about messaging the purpose of BWCs on the other (e.g., INT_30). Generally, communication about BWCs and their promotion is complex, and it is a skill to communicate clearly and to use the right tone with different people.

> *It's not your average work environment where you can just do education sessions, send emails promoting it [BWCs], get people leaders to talk about it. It's way more complex than that. So, I think that was a real challenge.* (INT_13)

The overall view was that the realistic aim of BWCs should be the reduction of OV in NSWA rather than stopping violence in society. On the positive side, managers selected a participative approach to strengthen communication by allowing paramedics from each location to contribute to governance. At the same time, however, managers were also self-critical about key processes during the initial rollout of BWCs to three locations by NSWA in 2019.

> *At that point, there wasn't effective training, there wasn't effective messaging and the messaging that was out there was that the cameras were going to be used to help prosecute offenders.* (INT_9)

Such managerial self-critique mirrors some frontline staff perceptions, which highlighted shortcomings in communication around BWCs, also related to training. For example, the training package reached BWC training participants more than a year after the initial rollout of the cameras. One participant classified top-down communication about BWCs as:

> *Zero. We don't hear much from the top-down about body-worn cameras … They all talk the talk, but they don't walk the walk.* (INT_15)

Another frontline staff reduced communication to a *"couple of emails floating around about it and any questions [on] numbers"* (INT_20). One frontline paramedic explained that a BWC is *"just another small issue"* (INT_15) they have on. Furthermore, up-line communication regarding BWCs often remains unanswered. Therefore, instead of going through line management, some interview participants prefer talking to their health and safety business partner about how they can manage communication around BWCs. This view is also shared by the key informant who states:

> *Higher level management, they haven't had a lot of engagement with the teams with the project and the trial. They may occasionally oversee some emails that'll come out in trying to drive participation for the research elements.* (INT_9)

However, some senior managers are actively signing BWCs out and messaging their staff well. Overall, "a manager who is engaged and speaking to you regularly, I guess culturally across many different pieces, your teams are working better" (INT_10). Also, peer-to-peer communication and the leader-employee relationships are important to influence whether people are lodging claims directly or whether they are reporting them internally first. Some stations have "bigger cultural issues than other ones" (INT_13). To build trust, managers assured people that BWC footage would not be used for purposes other than OV.

> *We said to the staff, look we've managed to get to be a part of this trial, it's very exciting. There's going to be some education, there's going to be some training. There's some really, really good policy and legislation supporting this. We explained to them that, the footage was not ever going to be able to be viewed by me, or any local managers. We explained the process, that it would be secured in a secure site. That access would be controlled. It wouldn't be used for performance management purposes.* (INT_14)

Another trust-building action is to use informal conversations with staff, which may work more effectively in getting things done and changed than standing in front of them in a meeting about BWCs.

> *I'm a big fan of a sit down around a coffee and bringing up something I need to talk to them about as a group and I want them to spread a bit of information about and change the practice. I'll bring it up over coffee and say we've got a new policy, or something's changed. I will strategically insert that into conversations. It's a bit sly, but it does work.* (INT_15)

In terms of feedback, staff can provide feedback regarding BWCs in many ways. For example, a dedicated intranet page and emails set up for BWCs provide information and allow people to give feedback directly to the project team. Additionally, an external business partnering model is in place, where people can give feedback. Also, there is a dedicated WHS staff member within each operational business unit as an internal resource and face-to-face contact point for people who want to have a conversation and provide feedback but are uncomfortable "putting something in writing or over the phone" (INT_12).

Furthermore, frontline staff can provide feedback and suggestions through their existing management structures and employee surveys. In addition to the gathered feedback, further information on impact would be collected proactively rather than reactively using data on workers' compensation claims and incident data. Upon reflection on the first roll-out, communication was changed to strong messaging in training on the why, when, and how BWCs can be used.

Overall, communicating the benefits of BWCs could prevent staff from thinking: “This is just another thing we have to do, and I’m already not supported, and I’m already working over hours” INT_13).

EXTERNALLY USED COMMUNICATION METHODS

In terms of external communication, NSWA has already undertaken significant communication to the broader society using traditional media, such as news bulletins and broadcasts, press releases, and online social media platforms, such as Twitter, Instagram, and Facebook. Also, continual engagement with partner associations provides an opportunity to inform and provide feedback regarding issues and concerns related to BWCs.

RECOMMENDATIONS

- There needs to be comprehensive communication around BWC, including training, adoption, and psychological safety.
- People who talk positively about BWCs should be invited to workshops, in particular, where there is a negative view.
- Internal communication with frontline staff could be made more innovative, acknowledging they are time-poor and reading their emails is challenging. Innovation could mean using communication channels, such as radios, in the ambulance to remind frontline staff to use BWCs.
- Internal communication needs to be strengthened to mitigate the organisational culture of mistrust. Clear communication of the ‘Operating procedure’ with an emphasis on the usage of footage can be the first step, followed by team and supervisory discussions. Having the opportunity for questions and answers could settle staff doubts about the usage of footage, particularly when they contact aggressive patients.
- For external purposes, if funding allows, a commercial media campaign could be an effective approach to reach the public, including advocacy through social media.
- Communication should be focused on engaging people, which can be reached by sending regular messages to ‘Champions’ with the proportion who have done the training, motivating others to do the training too, and information about how the stations are meeting

their KPIs. Furthermore, having trainers and managers visit the stations to answer questions is a powerful face-to-face interaction to reach staff and promote engagement.

- Senior managers need to be enthusiastically on board, be able to pull out statistics and talk about OV, their concerns, and possible alternatives.
- Pushbacks may arise when communication is confusing, for example, when the unclear distinction is made between the optional and mandatory sign-out of BWCs. Therefore, clear communication and guidance are needed in the training around policy as BWCs can only be used under certain circumstances, and some staff members are hesitant about whether a situation is 'aggressive enough' to turn their BWCs on and how to justify it. A better understanding of the processes and the accountabilities of the process may increase BWC uptake.
- Staff feedback helps to better understand communication preferences as NSWA has a diverse workforce. Communication style and how staff like to engage exceeds the one-size-fits-all approach. Before a statewide rollout, a targeted understanding of communication preferences would be beneficial.

3.6. Advantages and disadvantages of introducing BWCs

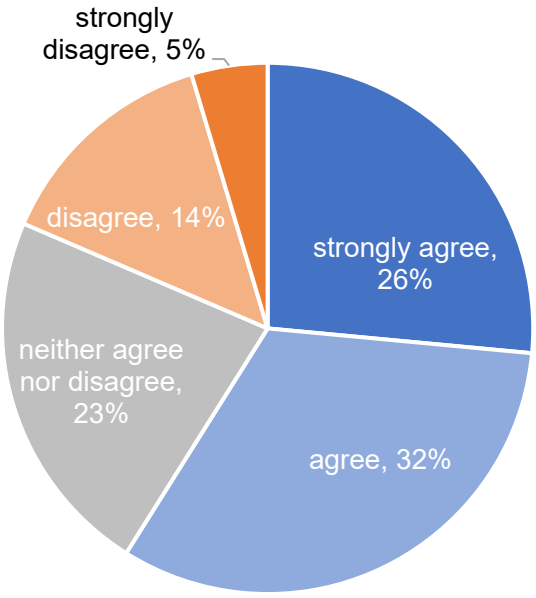
Through the surveys, frontline paramedics were further asked about their overall perceptions of BWCs (quantitative data) and were given the opportunity to provide their views of the specific advantages and disadvantages of using BWCs through open-ended, free-text questions (qualitative data).

3.6.1. Overall perception of the advantages and disadvantages of BWCs

On a scale from 1 (strongly agree) to 5 (strongly disagree), the frontline paramedics were asked to rate their perception of the statement, "I think the advantages of BWC will outweigh the disadvantages" (Figure 30). Fifty-eight per cent of the respondents agreed or strongly agreed that the advantages outweigh the disadvantages; almost one-fifth disagreed or strongly disagreed.

Notably, 23% were unsure, neither agreeing nor disagreeing. To some extent, this undecidedness appears based on personal experiences with patients that may have been mixed. The quotes below from the free-text questions about the specific advantages and disadvantages of BWCs demonstrate that using/activating the camera can either de-escalate or worsen a problematic situation with patients. Also, feeling uneasy about the perceived potential use of the footage by the management, the training deficits, and some practical issues may further contribute to the 23%.

Figure 30: Advantages of BWCs will outweigh the disadvantages



Quotes from the free-text questions on the specific advantages and disadvantages highlight the relatively high rate of undecidedness (23%):

> *"Have experienced incidences when activating the camera has diffused a situation but have also experienced the opposite where informing an aggressor that the camera has been activated has worsened verbal abuse."*
>
> *"I have mixed views on BWCs because I have seen them both make patients check their behaviour but also just as if not more frequently make them very upset and agitated and get upset about there being a camera present."*
>
> *"Can sometimes de-escalate the situation, however can sometimes also make it worse."*
>
> *"It may deter violence in patients who have competency and capacity, however I think it will create a divide between paramedics and their patients regarding confidential information being disclosed to paramedics."*

Overall, frontline paramedics value the advantages substantially higher than the disadvantages, while the undecided position is noticeable.

3.6.2. Specific advantages and disadvantages of BWCs

Across the three survey rounds, paramedic frontline workers highlighted the advantages (Table 3) and disadvantages (Table 4) of introducing BWCs into NSWA. The survey question asked, "What advantages or disadvantages do you see in the introduction of BWCs?"

The compilation of the free-text responses showed fewer advantages compared to the disadvantages. However, similarly worded advantages were reiterated several times and thus consolidated into fewer categories. The faced or felt disadvantages of the BWCs were more varied and therefore grouped into issues, with some consisting of bullet points for clarification. Several quotes are provided to demonstrate some of the different advantages and disadvantages.

Table 3: Advantages of BWCs (consolidated free-text responses)

Advantages BWCs…
provide accurate evidence/footage (of OV) for courts, prosecution, conviction, complaints, and patient accountability.
help review cases where psychological trauma from a case may have occurred to a paramedic.
allow for a potential reduction in rates of violence.
give a sense of security/safety and protection for paramedics.
are a potential tool for de-escalation of violent and aggressive patients/bystanders.
show a change of behaviour of patients/bystanders by, for example, deterring from violent/threatening behaviour and preventing/decreasing the chance of verbal and physical assault. also, demonstrate a change in paramedics' behaviour (e.g., *"improved Paramedic behaviour"*).

Quotes exemplifying the perceived advantages:

> *"Confidence/security in clinicians entering any scene at all that if anything did occur, and a BWC did not prevent harm occurring then there is at least video recorded evidence for proceedings later on. I also think that it serves as an educational tool. In that instances that harm has occurred to a crew member, it can be reviewed and assessed for indications on how to prevent similar incidents, or point out key factors to look out for. I think it has a positive impact on reducing harm as once patients and others know they are being recorded or have the potential to be recorded then they're behaviour changes. BWC can be used as a de-escalation tool."*
>
> *"They [BWCs] record what happens and give an independent view. They record what has happened and can be used as evidence if required. They have potential to record more than occupational violence, e.g., major incidents to provide a public record of events as they unfold."*
>
> *"Professional behaviour from paramedics, perceived compliance from aggressors."*
>
> *"Records actual footage of OV incidents, provides a sense of safety to paramedics, method to record paramedic behaviour in OV incidents."*
>
> *"As a single responder safety is paramount. That's why I sign one out all the time. Unfortunately, there is apathy and misunderstanding about its importance."*

Table 4: Disadvantages of BWCs (consolidated free-text responses)

Disadvantages BWCs…
(may) negatively impact the frontline work with patients by • being potential aggravators for patients when being recorded. • potentially getting associated with the police, which can lead to adverse reactions; also, the lights are opposite to NSWPF, which has the potential to agitate patients. • patients not opening up as much due to being recorded, due to the exposure of personal information and conversations. • the loss of confidentiality with patients, resulting in a divide between paramedics and their patients. • making agitated patients more agitated once they see the camera. • requiring additional explanation efforts/time with patients regarding using BWCs. • female patients becoming nervous and hesitant when performing 12 Lead Electrocardiograms (ECGs) and wearing the BWC. • giving a false sense of safety/security. • resulting in paramedics using the BWC to "protect" themselves rather than communication and de-escalation techniques.
training is perceived as deficient and inadequately implemented; work experience versus BWC to be considered.
(may) cause/evoke fear/unsettledness towards NSWA management by • potentially being blamed by management for not using the BWC (e.g., assaults may be random and unexpected (within seconds), hence, first reaction is self-protection, not turning on a BWC). • a perception of threat that footage will be used against paramedics when making clinical decisions. • the potential for NSWA to change its mind and use footage against paramedics. • the perception that in the aftermath of an incident, use/non-use of the camera is prioritised by management over staff welfare. • ambulance service looking to put the blame back on paramedics if they find any evidence of such on the footage of BWCs post-assault; evidence in court can also be used against paramedics in a punitive way from management. • recordings being used in disciplinary action and complaint investigation.
show scepticism in the prosecution by • the perception that OV perpetrators are not prosecuted as they should be. • the sentencing of offenders will not be changed just because there is video evidence.
raise practical and technical shortcomings, such as • uniform issues: heavy, bulky, does not fit to uniform well; another tool in the chest which "is not a magic fix"; gets caught on the seat belt in the car. • technical issues: unable to clearly identify when you are recording or on standby; the battery does not last for a whole 12-hour shift on standby all day. • process issues: requirement to check in and out, which takes additional time to prepare.
are perceived as a high cost – with potentially little change in actual numbers of assaults.

Quotes exemplifying frontline workers' concerns towards using BWCs:

Impact on paramedic-patient relationship

> *"I feel that what makes paramedics so unique and our interactions so effective is that we can build a good rapport and trust with the patient by either making the scene or the ambulance a safe space where they feel they can talk to us in confidence, allowing for greater patient care. I think if they feel that they are being recorded then it might increase patient stress levels and limit the ability to which they can confide in us thereby limiting overall patient care."*

> *"I believe that they have a negative impact on paramedic and patient relationship development. It creates a sense of distrust and the patient does not open up, making our job harder and hinders patient care."*

Training issues

> *"Poorly implemented. More training in and around areas of communication between Paramedics and Patients and poor attitudes. We should not be relying on cameras to protect us. Should two 20 year olds be working a night shift together with no experience? Camera will not protect against inexperience."*

> *"Aggravation of paranoid patients, unethical prosecution of people that are acting out of fear from fight or flight response that could have otherwise been de-escalated if paramedics had better understanding and attitudes towards patients with training in these skills."*

> *"We received little to no training initially and saw the implementor once. Teammates were also taking and using them [BWCs] without letting their workmate know, which was against the policy of ensuring people were aware they were being recorded."*

Fear/unsettledness towards NSWA management

> *"BWC was worn when my partner and I were physically assaulted, this happened within a split second and did not deter the assailant nor did we have a chance to turn it on. Management then questions whether or not we were wearing our BWC if an incident arises as if to shift blame to paramedics if not wearing it rather than supporting them and discussing how to prevent the incident from occurring again."*

> *"Potential for NSW Ambulance to change their mind and use footage against paramedics (we swear a lot, we use black humour – what if ambulance decided to review this for disciplinary purposes)."*

> *"I see the use of recordings being used in disciplinary action and complaint investigation rather than for legal proceedings."*

4. Return on Investment

4.1. Data description and preliminary analysis

The following section of the report evaluates the feasibility of BWCs in addressing the incidents of OV experienced by NSWA frontline paramedics. Data from a total of ten stations were collected by NSWA for analysis. Out of the ten stations, three (Albury, Blacktown Superstation, and Ryde) are identified as control sites. For the control sites, BWCs are not deployed when health care operations are carried out. For the six trial stations, BWCs are voluntarily used by the frontline paramedic staff. Further details of station locations are provided in Table 5.

Table 5 List of stations used in study

Station	Address	Site
Albury	329–333 Wagga Rd	control
Artarmon Superstation	95–99 Reserve Road	trial
Blacktown Superstation	10 Bungaribbee Road	control
Hamilton	73–75 Denison Street	trial
Liverpool Superstation	1–3 Hoxton Park Road	trial
Northmead Superstation (Cherrybrook)	195 Briens Road	trial
Ryde	Ryde Hospital, Deniston Road	control
Sydney Ambulance Centre (SAC)	27 Gardens St, Eveleigh 2015	trial
Wagga Wagga	117 Fernleigh St, Turvey Park	trial

To get a sense of the impact of BWCs on the level of OV, quantitative analyses are performed using reported OV data available through NSWA. Specifically, individual level data that contains detailed records of healthcare operations performed by NSWA paramedics are collected. To assess the overall impact of BWCs on the level of OV, this report focuses on 15 variables of interest summarised in Table 6. The IMS+ number is used to identify each unique OV event reported by frontline paramedics from 1 December 2022 to 30 November 2023. Due to the sparseness of the dataset, violence types (Table 6, Items no. 4 to 13) are aggregated into a single variable at the station level. The dummy variable approach is then applied to identify whether an OV incident exists or not (1 when an OV event occurred, otherwise 0) during the sample period.

Table 6: Variables used to estimate the occurrence of occupational violence

Item no.	Variable label	Variable description
1	IMS+	Incident Management System Plus OV identification number
2	Date of Incident	Date of OV occurrence
3	Station	Name of ambulance station
4	Violence Type: Assault	OV type is Physical Assault
5	Violence Type: Intimidation & Threats	OV type is Intimidation & Threats
6	Violence Type: Object Thrown	OV type is Object Thrown
7	Violence Type: Property Damage	OV type is Property Damage
8	Violence Type: Road Rage	OV type is Road Rage
9	Violence Type: Sexualised Behaviours	OV type is Sexualised Behaviours
10	Violence Type: Spitting	OV type is Spitting
11	Violence Type: Verbal Abuse	OV type is Verbal Abuse
12	Violence Type: Vilification	OV type is Vilification
13	Violence Type: Witness	OV type is Witness
14	BWC Worn	If BWC is worn = "Yes" otherwise blank
15	BWC Recording	If BWC is recording = "Yes" otherwise blank

Figure 31 provides the frequency distribution of OV occurrences for all 10 stations grouped by BWC activation (total observations=36). Panel 1 (n=24, mean OV=13.17 cases) provides evidence of higher occurrences of OV when BWCs are not activated. This contrasts with lower occurrences of OV in Panel 2 (n=12, mean OV=2.42 cases) when BWCs are activated. Statistical analysis using the bootstrap independent samples t-test suggests that the group means are statistically different (mean difference=10.75 cases, p value <0.01 using a 2-tailed test). The test also has a Cohen's d of 1.024, suggesting the difference in the mean occurrences of OV between the two groups has a large effect size (>0.8).

Figure 31 Frequency Distribution of OV Occurrences grouped by BWC usage (n=36)

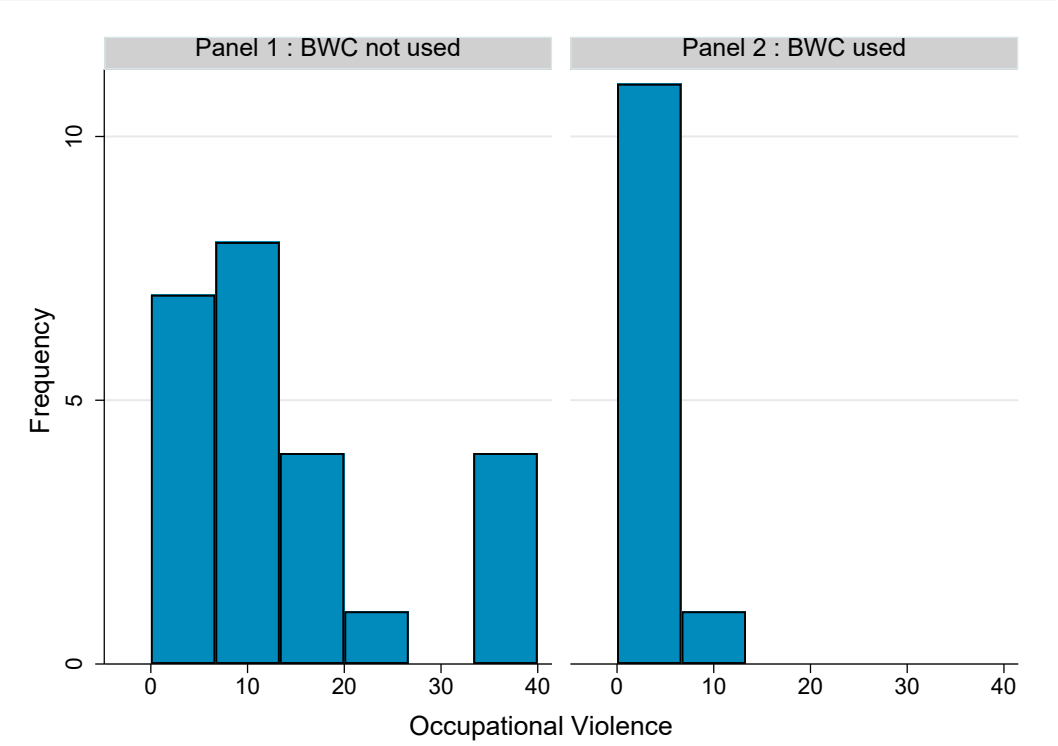


Table 7 tabulates the preliminary results summarising the occurrences of OV for the abovementioned stations. As shown in Panel A of Table 7, stations that used BWCs during the sample period tend to exhibit lower cases of OV. Notably, a yearly average of 27.83 cases per station is reported when BWCs are not used. In sharp contrast, an average of 4.17 cases per year can be seen for stations that employed BWCs. Similarly, in Panel B, when the results for the control stations are compared with the pairing stations, substantial reductions in OV cases can be seen. Overall, the preliminary results indicate that paramedics who employed BWCs experienced a reduction of between 71.8% and 85.0% in OV in their operations.

Table 7: Preliminary results

Panel A

Trial Stations	BWC not used	BWC used	% change
Artarmon Superstation	15	5	-66.7%
Hamilton	36	2	-94.4%
Liverpool Superstation	46	2	-95.7%
Northmead Superstation*	41	1	-97.6%
Sydney Ambulance Centre	18	10	-44.4%
Wagga Wagga	11	5	-54.5%
Total	167	25	-85.0%
Average number of OV per station (Dec 22–Nov 23)	27.83	4.17	

Panel B

Control Stations vs pairing stations	Control Stations	Pairing stations	% change
Albury (Wagga Wagga)	16	5	-68.8%
Blacktown Superstation (Northmead Superstation*)	15	1	-93.3%
Ryde (Artarmon)	8	5	-37.5%
Total	39	11	-71.8%
Average number of OV per station (Dec 22–Nov 23)	13.00	3.66	

Notes: Pairing stations are in brackets

*Includes Cherrybrook station

Since an important objective of the BWC project is to mitigate the occurrences of OV by influencing the behaviour of people, it cannot be neglected that the use of BWCs may expose paramedics to violent behaviour. Because people may respond differently when the BWCs are deployed, further analysis on the impact of BWC on OV occurrences is warranted. To this end, OV occurrences categorised by behavioural response is analysed ("BWC Phase 2 Database"). A total of 105 OV cases from 1 December 2022 to 30 November 2023 are available for analysis. The categorical data in Table 8 shows that when the use of BWCs is declared, users reported seven cases (6.7% of all cases) that resulted in de-escalation of violent behaviour and 62 cases (or 59% of all cases) where, despite significant risk, no violence ensued. Two cases (or 1.9% of all cases) resulted in escalated violent behaviour and 34 cases (or 32.4%) resulted no change in behaviour. This suggests that the preliminary results documented in Table 7 should be adjusted to account for these behavioural effects that do not generate any risk mitigation benefits to the BWC users.

Table 8: Behavioural response (when BWC recording declared only)

OV categories	n	column %
Escalated violent behaviour	2	1.9%
No change in behaviour	34	32.4%
Deescalated violent behaviour	7	6.7%
Significant risk but no OV	62	59.0%
Total	105	100.0%

Note: The analysis of this data could be improved using a regression approach to explore a possible causal relationship between BWC activations and cases of OV by categories. However, due to insufficient observations in the dataset such an analysis cannot be performed in this study. Future data collection may facilitate such analysis.

4.2. The cost-benefit approach

All costing estimates and relevant cash flow items are provided by NSWA. These estimates represent direct, indirect and opportunity costs associated with implementing the BWC project. Figure 32 displays all relevant costs associated with the BWC project, which has a total cost of $1.27 million over 4.5 years. In Figure 32, the major cost components are salary costs ($630,097, 49.6%); equipment and set-up costs ($476,123, 37.5%), and research and review costs ($131,500, 10.4%). The total project cost is further decomposed into identifiable items and sorted by size in Figure 33.

Figure 32: NSWA BWCs Project cost estimates – total estimated costs = $1,270,640

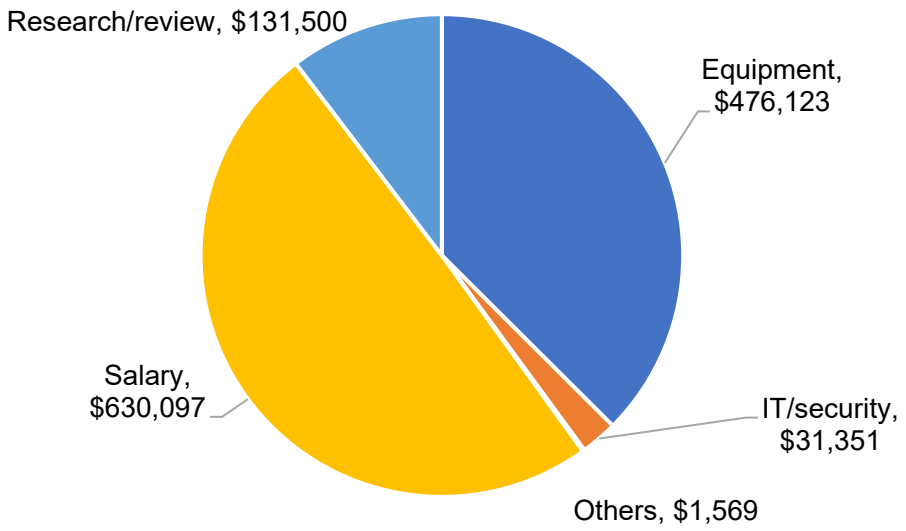
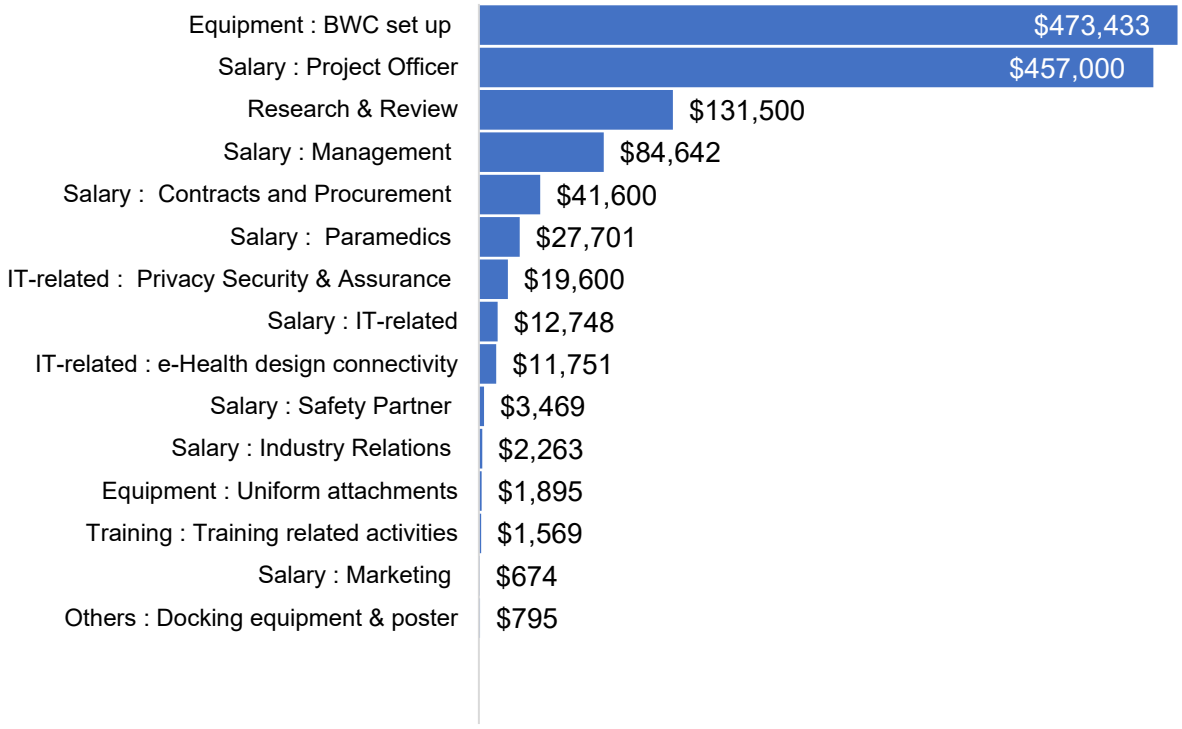


Figure 33: NSWA BWC Project relevant cost items



Intangible costs may arise from workplace violence. For instance, when an employee requires medical treatment or misses work due to an OV incident, workers' compensation (WC) insurance will normally cover these costs although the claim will affect subsequent insurance premiums. For an uninsured employer, the full cost of the OV incident will be borne by the organisation.

To estimate the intangible costs, this report uses the WC claims data related to OV available through NSWA Recovery Team. In addition, the average cost of WC claims and the number of absent days per claim are provided by i-Care. Possible economic benefits arising from using BWCs may relate to the reduction of OV, which will further reduce the average cost of WC claims and absent days.

An OV incident may also lead to less intangible costs that are difficult to quantify. This may include fatigue, stress, and burnout. Other costs may relate to separation, recruiting, hiring, training, and loss of productivity due to a new appointment. The estimation of these intangible costs is beyond the scope of this report.

4.3. Project evaluation criteria

The economic assessment of the BWC project encompasses the following:

- Development of a financial model for the BWC project. The costs and benefits associated with the BWC project will be captured and evaluated using established project evaluation criteria, including benefit-cost ratio (BCR), return on investment (ROI), net present value (NPV), and profitability index (PI) over the project's lifespan.
- Sensitivity analysis. This involves adjusting the model assumptions to determine the sensitivity of the evaluation criteria due to the adjustments.
- Simulation analysis. The future paths and values of inputs parameters are estimated with error. Addressing the uncertainty of input parameters using the Monte Carlo simulation analysis provides a powerful tool for generating a large quantity of estimates for the NPV approach.

4.4. Financial modelling

Yearly cash flow analysis was performed for the BWC project to compare the present value of the project's annual net cash flows returned by the project against its initial development costs. The BCR is calculated by dividing the yearly total benefit per station by the yearly total cost per station. When BCR is >1, the benefit of project exceeds the cost of project and thus is a desirable outcome. The ROI method is calculated by dividing the total cost avoided per year due to BWC implementation by the total BWC implementation cost per year, expressed as a yearly percentage. The yearly net cash flows are discounted by a discount rate (7% per year, see Harrison, 2010) throughout the project's lifespan of 5 years. A positive NPV indicates a net economic benefit and the project should be accepted. Conversely, if the NPV is negative, the proposed project should be rejected. The NPV criterion is commonly employed to evaluate government projects. A net increase in social welfare is expected when NPV is >0 and BCR>1 (NSW Treasury, 2023). PI uses the discounted yearly net cash flows divided by initial outlay. A PI value of >1 suggests the present value of all future benefits is greater than the project's initial outlay. Key inputs to the financial model include estimates for the net reduction in OV per year due to BWCs, the average number of WC claims per year, average cost per WC claim, and the average absent days per claim.

4.5. Base case analysis

As a preliminary analysis, the base case model is constructed using the data and methodology described in the preceding sections. Table 9 lists the input parameters and cost-benefit outcomes based on the four evaluation criteria. Detailed description of items 1 to 16 can be found in

Appendix 2. Notably, the BCR has a value of 2.8 (>1) suggesting the economic benefits arising from the BWC project is more than twice its costs, thus, it is a favourable outcome. The NPV of the proposed BWC project is positive ($642,022), indicating the project can generate a present value of annual cash flows greater than the initial development costs of $1,411,822. In line with the NPV criterion, the financial benefits arising from the project are expected to outweigh the associated costs as indicated by the Profitability Index (>1.0). The ROI of 177.4% provides further evidence of a feasible outcome for the project, consistent with the NPV and PI evaluation criteria.

Table 9: Results for the Base Case Model

Cost Benefit Analysis of Body-Worn Cameras	**Base case**	**Item no.**
Average number of OV per year (adjusted for underreporting)	208.78	(1)
Net reduction in OV per year due to BWCs	77.55	(2)
Unadjusted average number of WC claims per year	1.9	(3)
Adjusted proportion of WC claims per year	5.9%	(4)
Estimated cost per WC claim	$94,251	(5)
Average absent day per claim	210	(6)
Yearly economic loss due to absent days per claim	$77,302	(7)
Total cost avoided per year due to BWC implementation	$783,278	(8)
Yearly total benefit per station	$78,328	(9)
Total units of BWCs	120	(10)
Estimated total project cost (over 4.5 years)	$1,270,640	(11)
Estimated project cost over 5 years	$1,411,822	(12)
Unit cost of BWCs per year	$2,353	(13)
Total BWC implementation cost per year	$282,364	(14)
Yearly net cash flow	$500,914	(15)
Yearly total cost per station	$28,236	(16)
Project evaluation criteria		
Benefit-cost ratio	2.8	
Rate of return on investment (ROI) per year	177.4%	
Net Present Value	$642,022	
Profitability Index	1.45	

4.6. Sensitivity analysis

A sensitivity analysis was conducted to determine the economic success or failure of the project under three different scenarios. The procedure involves adjusting one key input parameter each time by a certain percentage and its effect on the evaluation criteria is documented. Three scenarios employed in this study were: “Base case”, “Pessimistic” and “Optimistic”. In each of the three scenarios, a different set of estimates for the project input parameters are used as documented in Appendix 3 (using a discount rate of 7%).

For the input parameters, each forecast was adjusted by +/-20% from the base case and the results are documented in Table 10. In addition to the results documented in Table 9, data storage costs for the BWC recordings are also included in the sensitivity analysis. It is assumed that the recordings will be stored for 25 years and the associated costs of $1,000,000 (assumed base case) will be paid in equal yearly instalments. The results of the sensitivity analysis are presented in Table 10 using a discount rate of 7%. Changes in the evaluation criteria from the base case are shown in Table 11.

The results displayed in Table 10 show that the viability of the BWC project is highly sensitive to changes in the OV reduction and the number of WC claims. For the former, when the forecast is increased by 20% from the base case, the project’s NPV increases from $642,020 to $1,284,338 and a reduction in the forecast by the same percentage lowered the NPV substantially to -$298, making the project not feasible. Similarly, when the number of WC claims fell by 20%, the NPV dropped below zero (-$297) due to a much smaller savings relative to the base case. However, the yearly instalments of data storage costs have little impact on the evaluation criteria.

Table 10: Sensitivity Analysis of Evaluation Criteria (i=7%, (-/+) 20% & (+/-) 20% from Base case)

	Forecast		
	Pessimistic	Base case	Optimistic
Net reduction in OV per year due to BWCs	62.04	77.55	93.06
BCR	2.22	2.77	3.33
ROI	121.9%	177.4%	232.9%
NPV	-$298	$642,020	$1,284,338
PI	1.00	1.45	1.91
Estimated average number of WC claims per year	14.75	12.29	9.83
BCR	3.33	2.77	2.22
ROI	232.9%	177.4%	121.9%
NPV	$1,284,341	$642,022	-$297
PI	1.91	1.45	1.00
Estimated average cost per WC claim	$113,101	$94,251	$75,401
BCR	3.08	2.77	2.47
ROI	207.9%	177.4%	146.9%
NPV	$994,912	$642,022	$289,133
PI	1.70	1.45	1.20
Average absent day per claim	252.00	210.00	168.00
BCR	3.02	2.77	2.52
ROI	202.4%	177.4%	152.4%
NPV	$931,451	$642,022	$352,593
PI	1.66	1.45	1.25
Data storage cost over 25 years	$1,200,000	$1,000,000	$800,000
BCR	2.37	2.43	2.49
ROI	137.1%	143.0%	149.2%
NPV	$205,213	$278,014	$350,816
PI	1.12	1.17	1.22

Notes: NPV < 0 and PI≤ 1 are highlighted.

Table 11: Changes of Evaluation Criteria from Base Case (i=7%, (-/+) 20% & (+/-) 20%)

	Forecast	
	Pessimistic	Optimistic
Net reduction in OV per year due to BWCs	62.04	93.06
BCR	-20.0%	20.0%
ROI	-31.3%	31.3%
NPV	-100.0%	100.0%
PI	-31.3%	31.3%
Estimated average number of WC claims per year	14.75	9.83
BCR	20.0%	-20.0%
ROI	31.3%	-31.3%
NPV	100.0%	-100.0%
PI	31.3%	-31.3%
Estimated average cost per WC claim	$113,101	$75,401
BCR	11.0%	-11.0%
ROI	17.2%	-17.2%
NPV	55.0%	-55.0%
PI	17.2%	-17.2%
Average absent day per claim	252.00	168.00
BCR	9.0%	-9.0%
ROI	14.1%	-14.1%
NPV	45.1%	-45.1%
PI	14.1%	-14.1%
Data storage cost over 25 years	$1,200,000	$800,000
BCR	-2.4%	2.5%
ROI	-4.1%	4.3%
NPV	-26.2%	26.2%
PI	-4.1%	4.3%

Notes: changes (+/-) greater than 30% are highlighted.

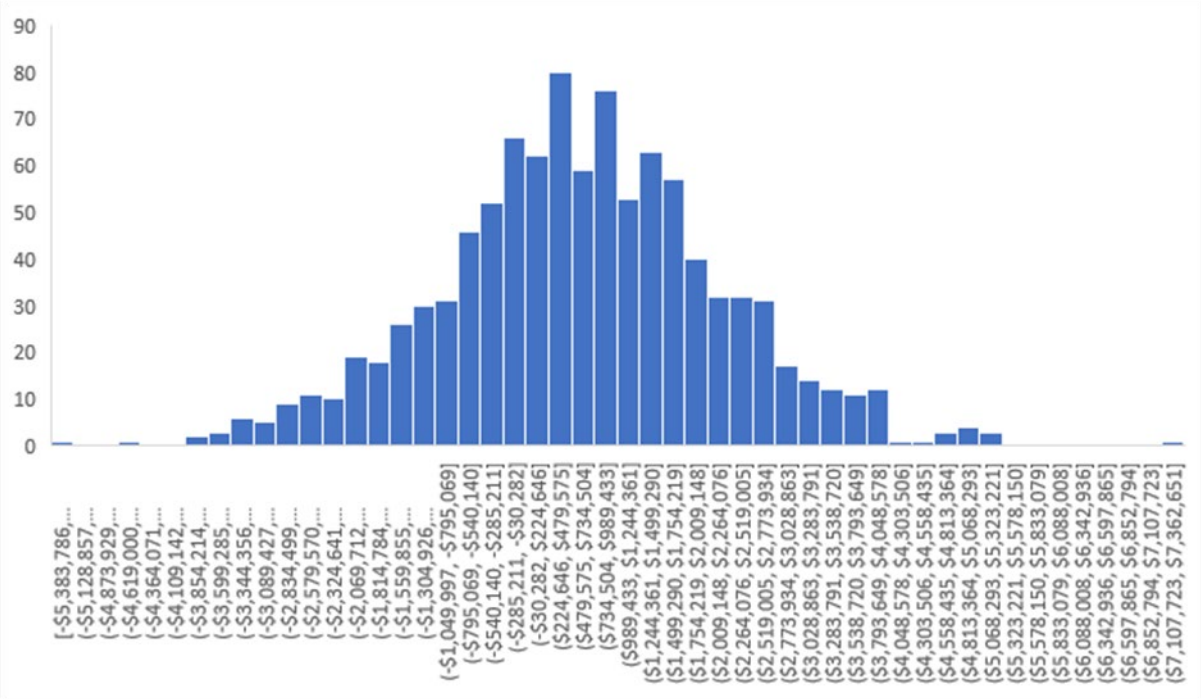
4.7. Monte Carlo simulation

Given the uncertainty associated with the parameter estimates and how they may evolve in practice, further analysis using Monte Carlo simulation is necessary to provide a robust economic assessment of the project. Using the NPV criterion, the simulation experiment involves the follow steps:

- Simulate the probability distributions for each of the key input parameters. These parameters are listed in Appendix 4.
- One value is randomly selected for each of the key parameters from their respective distributions.
- The randomly selected values are jointly used to calculate the project NPV.
- The simulated NPV outcome is stored, and the previous two steps are repeated. A histogram is used to plot the probability distribution of the stored NPV outcomes.

Figure 34 below displays the probability distribution of the project NPVs. The corresponding results in Appendix 5 indicate that the probability of achieving an NPV greater than zero is 66.1%, suggesting a probability of 33.9% that the project is expected to achieve a project NPV of zero or less. The overall mean NPV from the Monte Carlo simulation analysis is $596,813 (randomly simulated discount rate = 7.28%), thus the BWC project can potentially generate a net economic benefit to the society.

Figure 34: Probability Distribution of BWC Project NPV with 1000 replications



4.8. Limitations of the cost-benefit analysis

While the cost-benefit approach is widely employed worldwide to assess the merits of government spending and project proposals, this approach has several limitations. Three main limitations are highlighted below:

- It is difficult to predict drivers or factors that may impact the economic outcome. Changes in the occurrences of occupational violence, behavioural response to the use of BWCs, the number of workers' compensation claims, and material costs can be challenging to predict, especially in the long-term.
- The availability of high-quality data is critical to gaining an accurate insight into the benefits and costs of any project proposal. Therefore, cost-benefit analysis will not provide an accurate economic assessment of a project proposal if the available dataset is incomplete or inaccurate.

- While the cost-benefit analysis is an evidence-based approach, other non-monetary reasons may motivate an organisation to pursue a project. In these cases, it can be useful to conduct a qualitative study to better understand the human experience, behaviour, beliefs, or attitudes under various contexts.

4.9. Conclusions

- The findings from quantitative analysis conducted in this study demonstrated that body-worn cameras have the potential for mitigating occupational risk, evidenced by the lower occurrences of occupational violence for stations that employed BWCs.
- A cost-benefit analysis conducted using multiple evaluation criteria further suggests evidence of a net economic benefit to society. However, the viability of the BWC project is highly sensitive to the underlying model assumptions. Specifically, project feasibility is highly dependent on four key model input parameters, which are:
    - Reduction in OV per year relating to the use of BWCs
    - The number of WC claims per year resulting from OV
    - Financial cost per WC claim
    - Absent day per WC claim.
- The project's salary and equipment costs form a significant portion of the overall direct cost that enabled the implementation of the BWC program.

4.10. Recommendations

- The datasets available for quantitative analysis are generally sparse and may undermine the veracity of the results reported in this study. The use of high-quality data is critical to gain an accurate insight into the benefits of the BWC program and thus, it would be desirable for NSWA to collect more data over a longer period to allow for a more comprehensive study.
- This report does not consider intangible costs such as fatigue, stress and burnout. The exclusion of these costs may underestimate the true cost or benefit of the BWC program. This raises opportunities for further research into these areas.
- NSWA could work with other government agencies to identify potential economies of scale and cost savings related to BWC technology.

5. External perceptions of BWCs

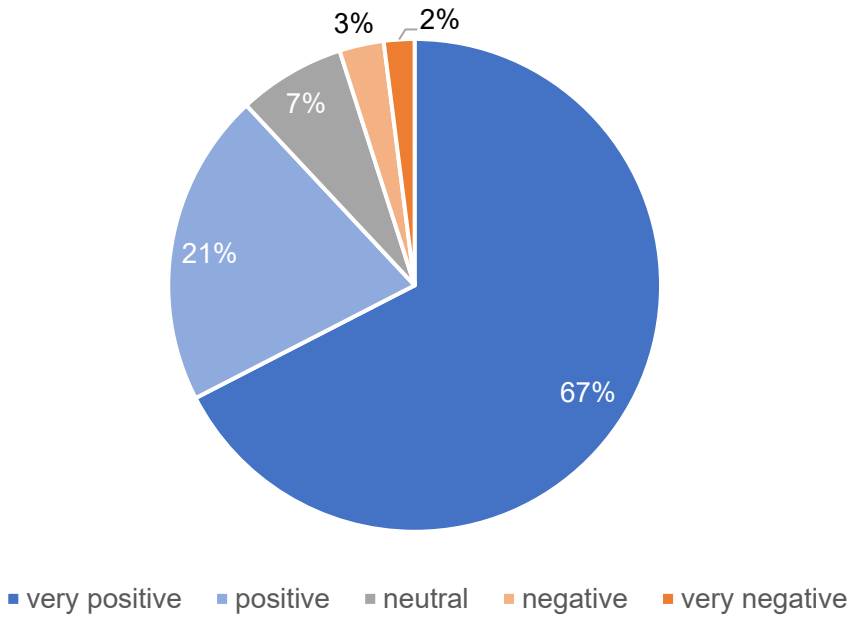
5.1. Analysis of external stakeholder survey data

As outlined in Section 1.5, the external stakeholder survey was conducted to obtain a holistic picture – complementing and comparing the internal view of NSWA – of the perception of using BWCs by paramedic frontline workers. Hence, the following shows the view of the stakeholders, consisting of the general community and respondents with links to ambulance services (please also refer to Section 1.5.2).

5.1.1. Overall stakeholder attitude towards BWCs

An overwhelming majority of the respondents have a positive or very positive (88%) attitude towards paramedics using BWCs, with only 5% of respondents having a negative or very negative attitude and 7% neutral (Figure 35). In comparison, only 59% of paramedic frontline workers had a positive or very positive attitude toward BWCs (Figure 21). That is, while also predominantly positive, the NSWA-internal view was more sceptical than the external stakeholder view.

Figure 35: Respondents' overall attitude towards BWCs



In analysing the data further, it becomes apparent that the general community is highly in favour of paramedics using BWCs (93%) (Figure 36). While substantially in favour as well, the attitude towards BWCs of the respondents with links to ambulance services is somewhat lower, at 78% (Figure 37). This lower rate may be influenced by the link to the ambulance services, with the paramedic frontline workers scoring positive or very positive at 59%. The 59% is further validated by the respondents with a link to ambulance services who identified as paramedic frontline workers. Data showed that 63% of them had a positive or very positive attitude toward using BWCs.

Figure 36: General community's overall attitude towards BWCs

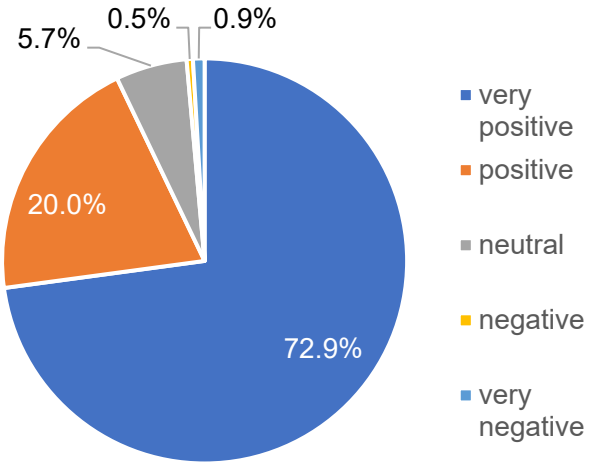
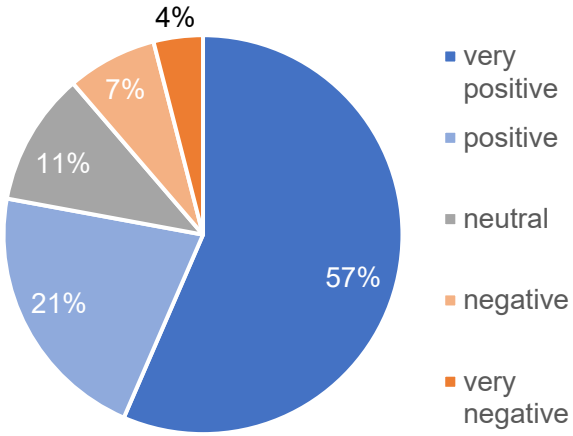


Figure 37: With a link to ambulance service: overall attitude towards BWCs



5.1.2. Nuanced stakeholder attitude to BWCs

The optimistic view of the external stakeholders is further demonstrated by the responses to the questions about whether they prefer paramedic frontline workers to wear a BWC (Figure 39) and whether the advantages of BWCs outweigh their disadvantages. Compared with the paramedics' perspective, the external stakeholders (88%) value the advantages substantially more than the frontline workers (58%) (Figure 30).

Figure 38: Advantages of BWCs outweigh their disadvantages

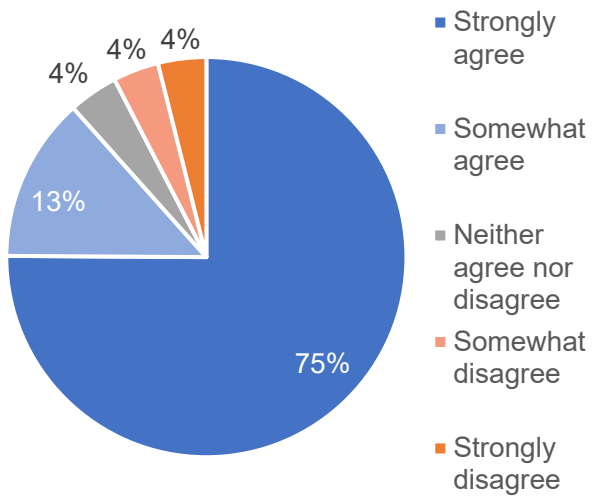
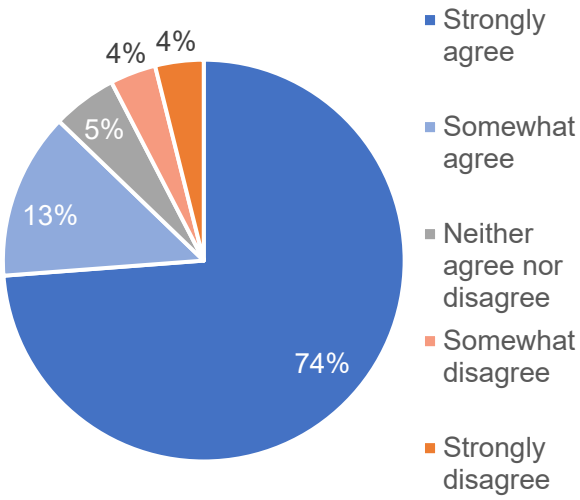


Figure 39: Preference paramedics wearing BWCs



Asked about their concerns about privacy issues, the external stakeholders were more hesitant; however, they still clearly indicated disagreement, at 63% (Figure 41). Similarly, the respondents somewhat or strongly disagreed (83%) on the possibility that BWCs used by paramedic frontline workers may slow their ability to deliver care (Figure 40).

Figure 40: Use of BWCs may slow paramedics' ability to deliver care

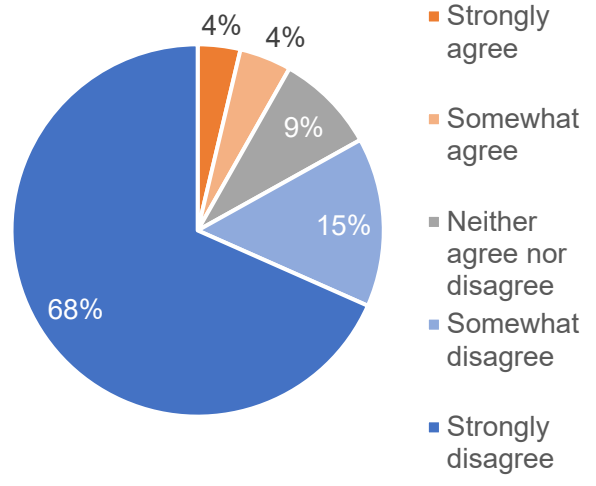
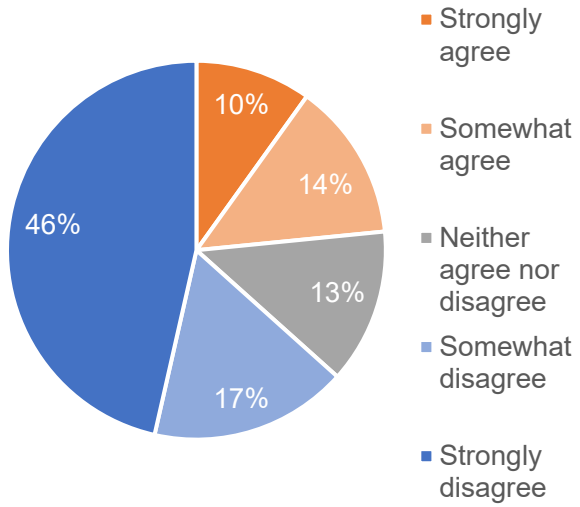


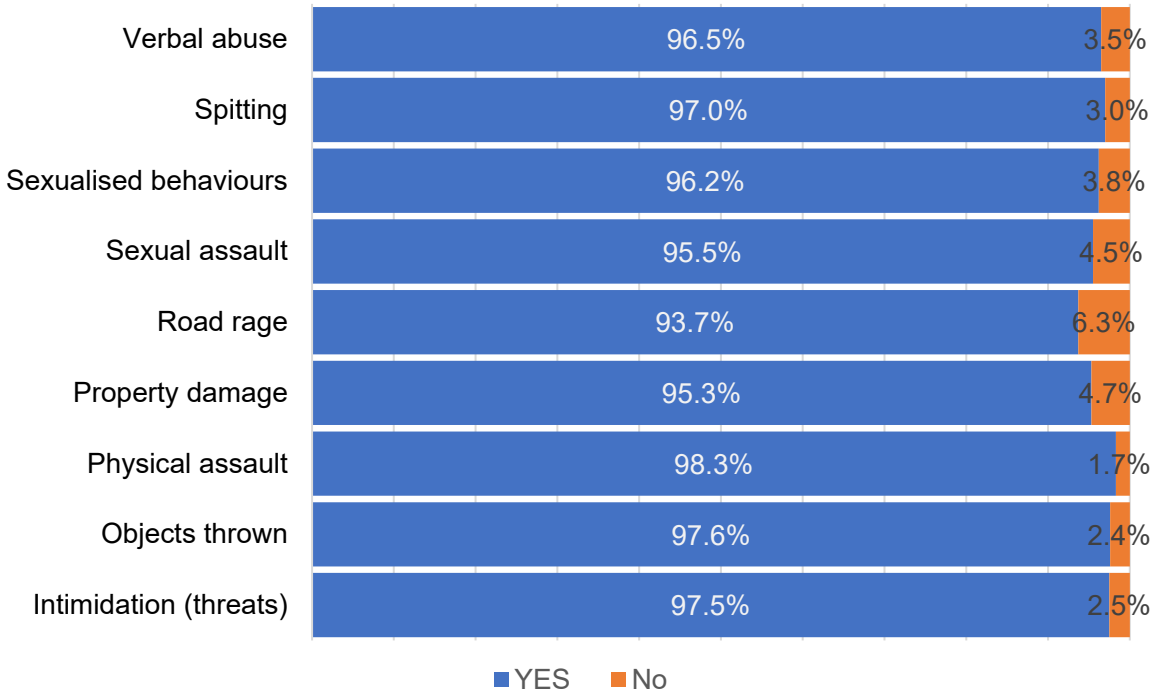
Figure 41: Concerns as a patient about privacy issues



This overall high approval rating for using BWCs by paramedics appeared to be founded on the fact that the external stakeholders care for the paramedic frontline workers. Data showed that 99% of the respondents 'strongly agreed' that paramedics should be safe doing their work.

Therefore, it is unsurprising that the external stakeholders see BWCs as a helpful tool to protect paramedic frontline workers against OV. The survey asked, "Under what circumstances do you feel it would be appropriate for paramedics to record interactions using BWCs?" The respondents overwhelmingly endorsed recording all nine listed OV incidences at the mid to high 90% level (Figure 42). Physical assault, objects thrown, and intimidation were rated the highest.

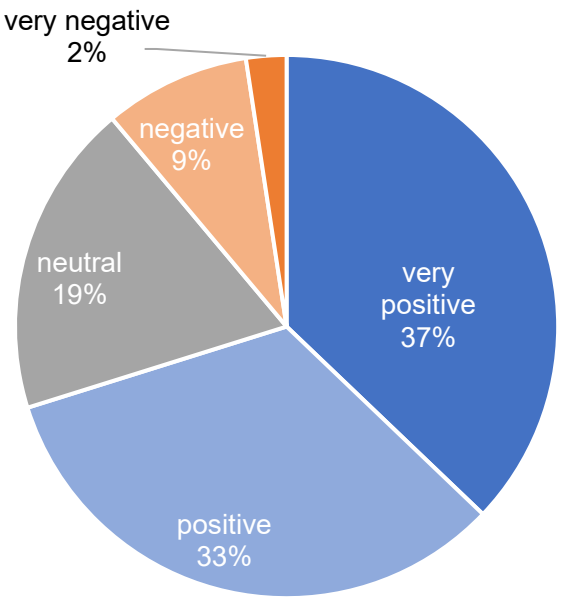
Figure 42: Appropriate circumstances for paramedics to record OV interactions using BWCs



The response on the perceived impact of BWCs on the relationship between paramedics and patients was interesting, particularly in comparison with the paramedic frontline workers' perception. More than two-thirds (70%) of the external stakeholders appraised the impact as positive or very positive, 19% did not take a position, and the rest considered the impact as negative or very negative (Figure 43). That is, the external stakeholders deemed the impact of BWCs on the relationship with patients much more positively than the frontline workers (Figure 29).

Adding a further layer of analysis, it appears that the general community respondents viewed the impact positively or very positively with 78% (neutral with 17%). The respondents with links to ambulance services perceived the impact on the relationship as positive or very positive with 57% (neutral with 23%). As a result, this additional granularity demonstrates that the general community considers BWCs more positively than the paramedic frontline workers.

Figure 43: Impact of BWCs on the relationship between paramedics and patients



5.2. Synthesis and recommendations

Externally, communication can support public acceptance of BWCs.

There is a perceived risk of potential unintended consequences around patient-clinician interaction, which can be managed through narrative and communication and educating the public about NSWA's requirements and the benefits of using BWCs.

Regarding external feedback, patients and community members can use email to send feedback directly to the BWC team. Feedback from other channels is referred to the BWC team for review and response. Up to now, no negative feedback on BWCs has been received from patients or community members. Instead, public feedback was either supportive or interrogating about why BWCs had not yet been implemented across the whole organisation.

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7. Project Team

Associate Professor Larissa Bamberry has extensive experience researching organisations, labour markets and gender relations in regional Australia. She has undertaken various qualitative and quantitative research projects for government and industry. Of particular relevance to this project, she has recently prepared a report on skill shortages in agriculture in the Riverina and undertaken a range of qualitative interviews with young people in regional and metropolitan locations, exploring their experiences of education, training, employment, and unemployment.

Associate Professor Alain Neher is an Associate Head of the School of Business at Charles Sturt University. Before joining academia, he worked in industry for over 25 years, including senior management and leadership roles in private, public, and not-for-profit organisations and armed forces logistics, focusing on support services. His research interests include business ethics, organisational culture and values, performance management, workforce wellbeing, digitisation, and ESG (Environmental, Social, Governance).

Dr Lucia Wuersch is a Lecturer in the School of Business and specialises in communication and relationship management and organisational training design and development. She has experience working on various communication and community-building projects, including the digital transformation of remote work settings; health professionals' fall-reduction training using virtual reality; and community resilience building through a pollinator garden in regional Australia. Lucia focuses on qualitative research methodologies.

Dr Alfred Wong is a Senior Lecturer in the School of Business. His expertise is in statistical analysis, including large and meta-data sets, financial management, and applied economics. His research interests are in empirical finance and applied healthcare economics. He has won several teaching and research awards, published in international peer-reviewed academic journals, and completed several industry research grants. Alfred is a member of the Global Association of Risk Professionals, USA.

Clare Sutton is a Senior Lecturer in Paramedicine at Charles Sturt University. Her research interests relate to resilience and promoting health and wellbeing in emergency service workers, student paramedics, and volunteer responders. She has extensive experience in the emergency services sector. She has held several leadership positions, including program lead of paramedicine at CSU and Chair of the Paramedic Wellbeing Working Group for the Australasian College of Paramedicine (ACP).

Dr Rachel Hogg is a Senior Lecturer in Psychology with significant research experience in industrial-organisational psychology, social psychology, and workplace wellbeing. Rachel has researched the impact of workplace injuries, mental health in the workplace, and has teaching expertise in stress, trauma, and coping. Rachel conducts both qualitative and quantitative research and has significant experience collecting and analysing research data.

Dr Ian Skinner is a Senior Lecturer in the School of Allied Health Exercises & Sports Sciences. He researches the mechanisms and management of pain and the efficacy of patient-centred approaches to help manage people with debilitating chronic conditions. He has presented both nationally and internationally as an invited speaker on the nature of pain and evidence-based interventions for pain management in clinical practice. He has experience using a variety of research techniques.

Professor Peter O'Meara is an Adjunct Professor at Charles Sturt and in the Monash University Department of Paramedicine and a Director of the Global Paramedic Higher Education Council. Peter is an internationally recognised expert on paramedicine models. He is a registered paramedic with qualifications in health administration, public policy, and agricultural health and medicine.

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Appendix 1.

Rapid Review of Current Research and Practice on Body-Worn Cameras

Reference:

Skinner, I., Wuersch, L., Bamberry L., Sutton, C., Neher, A., Hogg, R., O'Meara, P., & Dwivedi, A. (2022) *Implementation of Body-Worn Cameras; Rapid Review of Current Research and Practice,* prepared by the Regional Work and Organisational Resilience Research Group, Charles Sturt University, for NSW Ambulance. ISBN Print: 9781864674262 / ISBN Electronic: 9781864674279.

Final-Rapid-Review-Report.pdf

Appendix 2.

Description of items for use in the base case analysis

Item no.	Description
(1)	Average number of OV cases per year calculated from the 10 stations and adjusted for underreporting of OV by 43% according to Maguire et al. (2018).
(2)	Estimated from total change in OV in Table 7 (Panel B), adjusted for behavioural effects that do not generate any risk mitigation benefits (see Table 8).
(3)	Calculated using statewide WC claims and paramedics headcount. Only include paid employees of NSWA (2020–2022).
(4)	WC claims adjusted by 5% to account for the possibility some employees do not apply for WC due to various reasons (see Table 2, Safe Work Australia, 2009).
(5)	Data provided by i-Care adjusted for 3% inflation.
(6)	Average absent day per claim. Data provided by i-Care.
(7)	Annualised weekly salary rates according to State Award 2022 (weighted by role type and adjusted for inflation rate of 3%) × absent days per year.
(8)	Calculated as net reduction in OV × (adjusted cost per WC claim + economic loss due to absent days) × adjusted proportion of WC claims.
(9)	Total cost avoided per year due to BWC implementation divided by total number of stations.
(10)	Total number of BWCs deployed by the stations.
(11)	Total project cost provided by NSWA. See Figure 32 for further details.
(12)	Project cost over 5 years based on total project cost provided by NSWA.
(13)	Total project cost over 5 years divided by total number of BWCs deployed.
(14)	Annualised total BWC cost using total project cost estimated over 5 years.
(15)	Total cost avoided per year due to BWC implementation less total BWC implementation cost per year.
(16)	Average number of BWCs per station × unit cost of BWC per year.

Appendix 3.

Sensitivity Analysis

Item	Input parameters	Pessimistic	Base case	Optimistic
1	Net reduction in OV per year due to BWCs	62	78	93
2	Estimated average number of WC claims per year	15	12	10
3	Estimated average cost per WC claim	$113,101	$94,251	$75,401
4	Average absent day per claim	252	210	168
5	Data storage cost over 25 years	$1,200,000	$1,000,000	$800,000

Appendix 4.

BWCs implementation project: NPV Monte Carlo simulation

Key parameters	Mean	Std Dev	95% LCI	95% UCI	MC seed
Estimated project cost over 5 years	$1,411,822	$500,000	431,822	2,391,822	2,773,160
Net reduction in OV cases due to BWCs	78	5	68	87	76
Proportion of WC claims per year	5.9%	2.50%	0.99%	10.79%	10.94%
Estimated cost per WC claim	$94,251	$10,000	74,651	113,851	86,194
Average absent day per claim	210	2	206	214	209
Discount rate (%)	7.00	1.00	5.04	8.96	8.06
Project life span (yrs.)	*5*		*5*	*5*	*5*
Yearly cost avoided	***$753,327***		***$96,414***	***$1,751,830***	***$1,306,942***
NPV	***$519,218***		***-$388,360***	***$2,566,659***	***$226,128***

Appendix 5.

Monte Carlo Simulation using 1,000 replications

Summary statistics	**i=7.28%**
NPV Mean ('000)	*$597*
NPV Standard Deviation ('000)	*$1,639*
% NPV > 0	*66.1%*
% NPV ≤ 0	*33.9%*
95% Lower CI ('000)	*-$2,616*
95% Upper CI ('000)	*$3,810*