

# Are social media promoting ocular protection in the community?

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During the Covid-19 pandemic, many countries worldwide introduced lockdown measures to control infection, causing people to spend more time at home. This resulted in reports of increasing incidences of do-it-yourself (DIY)-related trauma.

When the Covid-19 pandemic started in December 2019, and the subsequent UK lockdown legally came into force on 26 March 2020, many countries worldwide introduced isolating measures and industrial activity drastically reduced. With people spending more time in their houses, home improvement DIY projects became more popular. Since then, there were a rise in reports of DIY-related trauma [1], with Stedman, et al. suggesting that the number of serious ocular trauma cases was more than three times the average of the previous five years [2].

Due to the concerning increase of ocular trauma cases during the Covid-19 lockdown(s), we aim to identify how well eye protection is being promoted in the most relevant DIY searches in home improvement projects. Practical tips for DIY projects are now readily available over the internet, especially on the social media platforms.

Since 2005, YouTube has become a phenomenon for commercial and personal content distribution as well as for social networking, and it is the third most-visited website after Google and Facebook [3]. The ease of uploading videos, constant improvement of website content to support online sharing, and quick access to content are the factors that facilitate the growth and appeal of YouTube [4].

Because the use of YouTube became more popular during Covid-19 lockdowns, we would like to assess the quality of YouTube content and to evaluate whether ocular safety personal protective equipment (PPE) is being well demonstrated and explained in videos that present DIY home improvement projects.

## Methods

We performed a cross-sectional evaluation of internet-based video media. YouTube was searched using the keywords 'DIY home' to evaluate the information on DIY home project

videos. 'DIY home' was determined as the most commonly used search phrase across the UK using the Google Trends website (2020). Before searching, the computer history and cookies were deleted to prevent restrictions on the basis of user history. The search parameters were restricted to the period before Covid-19 started in Wuhan, China (October 2019 – October 2021), and settings were selected to search for the commonest keywords used in YouTube to look for videos related to home DIY projects. Possible keywords that included 'DIY home décor' were defined by using the related-queries table on the website. On the basis of a comparative search of the defined keyword results, 'DIY home' was identified as the search term.

Solely, the default relevance filter was used for the YouTube search. No other filters regarding video duration, upload day, type, and features were applied. Because studies reported that more than 90% of YouTube users click only the first three pages of search results, the search results were limited to the first 300 videos to include as many relevant videos as possible [5]. Advertisements from YouTube were not included in the analysis. As the search results may change on different days, a playlist was created and stored to save the search result.

We included YouTube videos demonstrating DIY work at home using devices that may produce hazards that need eye protection. We excluded any duplicates or any video showing only pure descriptive ideas of DIY home projects without showing practical demonstrations of how the work was done. Data collected included video characteristics, such as channel name with number of subscribers, view counts, length of video, year of video upload, and numbers of likes and comments. We also identified what DIY activities were shown in the videos, and when applicable as may pose ocular safety hazards, we identified the main ocular

safety hazard categories and determined whether ocular safety was demonstrated in the video description or in the video itself.

We used The UK Health and Safety Executive (HSE) regulations on eye protection as a standard reference for safety precautions needed to reduce the risks of ocular trauma. Hazards to the eyes may include chemical or liquid splash, dust, projectiles (working with power-driven tools), gas and vapour, thermal (fire, molten metals, hot solids), electric arcs or sparks, radiation (light, laser) or cryogenic substances. Ocular safety PPE may include safety spectacles or glasses, goggles (vented / non-vented), or face screens / face shields / visors. Going by the standard guidance by HSE (Table 1 and Figure 1), we determine whether ocular safety PPE was adequate.

When ocular safety PPE was used, we also collected information on whether side shields were present – side shields are items of ocular safety PPE that are designed to reduce the chances of unwanted flying debris getting to the eyes through the gaps on the outermost sides of safety glasses. We also identify whether there were any comments about what to do in case of eye injury in the videos. We performed kappa statistics to evaluate interobserver variability when collecting information regarding ocular safety PPE from the YouTube videos included. This study does not require approval or consent from the Local Research Ethics Committee as it contains only public data.

## Results

Amongst 300 videos, nine had to be excluded as they were removed from YouTube and were not available for analysis. One-hundred-and-forty-eight videos met the inclusion criteria. Sixty-three (42.6%) videos were from popular channels with over a million subscribers, and 59 (39.9%) videos had over a million view counts. Videos included in the analysis were uploaded from 2015 onwards.

# FEATURE

**Table 1: The main types of ocular safety PPE.**

Types of ocular safety PPE	Photo	Descriptions
Safety spectacles		<ul style="list-style-type: none"> <li>• May be separate lenses in a metal or plastic frame (similar in appearance to prescription glasses) or have a single lens / frame moulding (sometimes called eye-shields).</li> <li>• Most designs have side shields.</li> <li>• Spectacles can incorporate corrective lenses, while eye-shields may fit over prescription glasses.</li> </ul>
Goggles		<ul style="list-style-type: none"> <li>• Made with a flexible plastic frame and one or two lenses with a flexible elastic headband.</li> <li>• Gives the eyes protection from all angles as the complete rim is in contact with the face.</li> <li>• Some goggles are ventilated and may be unsuitable for protection against gases and fine dusts.</li> </ul>
Face screens / face shields / visor		<ul style="list-style-type: none"> <li>• One large lens with a frame and adjustable head harness or are mounted on a helmet.</li> <li>• Most can be worn with prescription glasses.</li> <li>• They protect the face but do not fully enclose the eyes.</li> </ul>

Among the included videos, six discussed ocular safety in the video description and 11 discussed ocular safety in the video itself. Ocular safety was demonstrated throughout the DIY work in 19 videos, and only occasionally in 20 videos. One-hundred-and-nine (73.6%) DIY videos did not demonstrate ocular protection throughout.

Based on HSE regulations on eye protection, 126 (85.1%) DIY videos showed inadequate ocular protection when doing DIY projects. Worryingly, none of the videos provide any general advice of what to do in case of eye injury. In one particular video with a million subscribers and a million view counts, the person demonstrating DIY projects specifically mentioned that when wearing ocular protection, he couldn't see what he was doing, and indirectly sent a message to viewers that these ocular protection PPE were a "nuisance."

Evaluation of interobserver variability using kappa statistics showed good agreement of interpretation of ocular safety PPE used in the YouTube videos included in this study ( $\kappa = 0.659$  ( $p < 0.001$ )).

Table 2 shows the different ocular hazards involved and ocular safety PPE used in the included videos, with the majority of the videos involving projectiles or power-driven tools and chemical or liquid. Safety spectacles or glasses were most commonly used, of which 17 included side shields.

**NOTE:** There are areas where eye protection is **mandatory** as indicated by the **coloured ticks**.

General lab areas	Non prescription based					Prescription based				
	Safety Glasses	Goggles	Vented goggles	Visor	High impact goggles	Safety Glasses	Goggles	Vented goggles	Visor	DSE glasses
Biological agents	✓	✓				✓	✓			
Chemical agents	✓	✓				✓	✓			
Dust particles and vapours		✓	x				✓	x		
Strong acids/bases	✓	✓	x	x		✓	✓	x	x	
Cryogenic	✓	✓		✓ <sub>p8</sub>						
Thermal	✓	✓✓								
Close screen work - laboratory						✓✓				✓

Specialist areas	Non prescription based					Prescription based				
	Safety Glasses	Goggles	Vented goggles	Visor	High impact goggles	Safety Glasses	Goggles	Vented goggles	Visor	DSE glasses
Ionising radiations	✓									
Optical - UV				✓ <sub>p8</sub>						
Optical - laser		✓* <sub>p9</sub>								
Close screen work - office										✓✓
Maintenance/ workshop	✓	✓			✓✓					

Voucher scheme is available for help with the purchase of these specialist forms of eyewear

✓ = recommended  
 ✓✓ = highly recommended  
 x = unsuitable

\* Laser eyewear is based on calculations dependent on the beam characteristics – specialist advice is required

Figure 1: Standard guidance on eye protection from the UK Health & Safety Executive regulations [6,7]. Used by kind permission of the Medical Research Council, as part of UK Research and Innovation.

**Table 2.**

Ocular hazard categories	No. of videos
Dust, projectiles (working with power-driven tools)	100
Chemical or liquid splash	68
Gas and vapour	2
Thermal (fire, molten metals, hot solids)	14
Electric arcs or sparks	8
Radiation (light / laser)	1
Cryogenic substances	0
Types of ocular safety PPE	
Safety spectacles / glasses	32
Goggles (vented / non-vented)	9
Face screens / face shields/visors	5

### What role can we play in promoting ocular safety?

This report showed that at present time, portrayal and promotion of ocular protection in social media platforms is still inadequate. As ophthalmic practitioners, we need to increase awareness among people in the community to look after their eye health by emphasising the importance of wearing ocular protection when doing DIY work that may pose ocular hazards. Ophthalmic practitioners should be involved in the UK national eye health week by organising a campaign to raise awareness about this in our community. Via a national campaign, the public should be educated about the different types of ocular safety goggles and the consequences of sustaining work-related ocular injury without the use of appropriate ocular safety PPE.

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**Declaration of competing interests:** None declared.