



ORIGINAL RESEARCH PAPER

Forensic Odontology

THE ROLE OF SOCIAL MEDIA PROFILES AND DENTAL DATA IN MIGRANT DISASTER VICTIM IDENTIFICATION

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Prof. Emilio Nuzzolese*

PhD Section of Legal Medicine, Department of Public Health and Pediatric Sciences, Corso Galileo Galilei 22, 10126 Torino, Italy *Corresponding Author

ABSTRACT

Migrant Disaster Victim Identification (MDVI) faces numerous challenges, among which the limited availability of antemortem (AM) data is one of the most critical. Migrants who die during irregular journeys to Europe are often recovered without documents, with uncertain nationality, scarce contextual information, and no accessible medical or dental records. Although postmortem (PM) procedures may include the collection of fingerprints, DNA, dental findings, radiographs, and personal effects, AM-PM reconciliation remains difficult when families are dispersed, unreachable, or reluctant to contact police authorities. This short communication proposes the integration of social media profiles and dental data as a complementary humanitarian forensic strategy. Smile photographs, selfies, profile images, videos, and group photographs shared through social networks may contain visible dental information, including diastemata, rotations, missing teeth, restorations, prosthetic elements, and other anterior dental features. These data cannot replace primary identifiers but may support exclusion, candidate prioritisation, and targeted antemortem enquiries. The author also suggests that the voluntary registration of social media handles during migrant reception could create useful digital contact points, particularly where arriving migrants are relatives, friends, or travelling companions of individuals who disappeared or died en route. A crucial role could be played by National Red Cross and Red Crescent Societies through the Restoring Family Links service, including operational tools such as the Trace the Face platform, which may facilitate the retrieval of antemortem facial and smile images. Training RFL officers to recognise relevant dental and digital antemortem information, in synergy with forensic odontologists, may enhance MDVI processes while preserving essential humanitarian safeguards.

INTRODUCTION

Migrant Disaster Victim Identification (MDVI) represents one of the most complex challenges in contemporary humanitarian forensic practice. Migrants who die during irregular journeys are frequently recovered without identity documents, with uncertain nationality, scarce circumstantial information and no accessible medical/dental records. In these cases, postmortem data may be collected through fingerprints, DNA, dental findings, radiographs, personal effects and biological profiling, but the reconciliation process is often delayed because corresponding antemortem information is unavailable, incomplete or difficult to retrieve [1].

Dental data can play a decisive role in these circumstances. Teeth, restorations, prosthetic work, orthodontic features, missing teeth, diastema, rotations, pigmentation, agenesis may support identification, exclusion, or at least the construction of a biological and social profile. Forensic odontology has repeatedly been described as an important component of human identification, missing-person investigations and humanitarian forensic action [1,2]. However, dentistry and dental radiology are still not systematically integrated into migrant health assessment, border identification procedures or postmortem protocols, despite their potential value for health care, age estimation and future identification [3,4].

The central problem is not only the quality of postmortem collection, but the lack of antemortem data with which to compare it. Many missing migrants may never have had regular dental care, or their dental records may be unavailable because of conflict, poverty, displacement, language barriers, lack of documentation or the absence of family contacts. At the same time, many migrants leave digital traces before and during their journey, including Facebook, Instagram, TikTok or WhatsApp profile images, selfies, videos, group photographs, tags, friends, followers and family links. These digital traces may contain visible dental information and may become complementary antemortem material when formal clinical records are not available [5].

SOCIAL MEDIA PROFILES AS ANTEMORTEM DENTAL SOURCES

Social media should not be regarded merely as investigative background. In MDVI, it may represent a structured source of potential antemortem information. Smile photographs and facial images can show anterior teeth and perioral features such as incisal edge morphology, crowding, spacing, rotations, diastema, missing teeth, crown discolorations, restorations, prosthetic elements, piercings and lip anomalies. These features are not sufficient, by themselves, for positive identification in a Disaster Victim Identification (DVI) context, but they may support preliminary sorting, exclusion of incompatible candidates, and prioritisation of further DNA or dental-record searches.

Previous work on selfie and smile photographs supports this role. Smile images and social media photographs have been proposed as auxiliary tools for missing and unidentified persons, especially where conventional dental records are not yet available [5]. A protocol proposal for smile selfie image analysis further supports the possibility of using visible anterior dental features as adjunctive information in forensic dental identification [6]. More recent work has explored the comparison of antemortem smile photographs with postmortem intraoral scans, indicating that 2D-3D methodologies may provide further opportunities in complex identification cases involving refugees, migrants and disaster victims [7].

This approach is particularly relevant in migrant routes, where formal identity documentation is often absent, but digital networks may preserve photographs, nicknames, family contacts, travel companions and group connections.

A smile photograph found on a social media profile, in a group image or among a travelling companion's posts may help compare visible anterior dental features with postmortem photographs, intraoral scans, odontograms and radiographs. The value of such material is not to replace scientific identifiers, but to expand the antemortem search space and help identify which missing-person files should be prioritised for formal comparison.

SOCIAL MEDIA HANDLES AT MIGRANT RECEPTION

In the author's opinion, a missed opportunity lies in the fact that social media profiles of arriving migrants are not

routinely recorded during reception or identification procedures, unless the individual is already of specific police interest. However, arriving migrants may be relatives, friends, travelling companions, followers or last digital contacts of persons who died or disappeared on the same route. Their voluntarily provided social media handles could later help trace missing persons, identify shared photographs, reconstruct travel networks and reach families who would otherwise remain unknown to authorities or humanitarian organizations.

This proposal should not be confused with indiscriminate surveillance. The registration of social media handles should be voluntary, informed, purpose-limited and subject to strict data-protection safeguards.

Migrants should receive clear multilingual information explaining that the purpose is humanitarian: family tracing, missing-person enquiries and possible MDVI. The profile should function as a digital contact point and community link, not as a substitute for identity documents or as a police-intelligence tool.

Border and reception authorities could therefore include an optional field for social media handles and preferred digital contact channels. Such information, if lawfully and ethically collected, could later assist humanitarian actors and forensic experts when a person is reported missing or when unidentified remains are recovered. This would create a bridge between living migrants, their digital communities, families of the missing and forensic services.

The proposed workflow for the voluntary collection and forensic use of social media profiles and dental data in MDVI is summarized in Fig. 1.

RESTORING FAMILY LINKS AND FORENSIC SYNERGY

A crucial role in the collection of antemortem data could be played by National Red Cross and Red Crescent Societies through the Restoring Family Links (RFL) service. RFL is a humanitarian service of the International Red Cross and Red Crescent Movement that helps people who have lost contact with relatives because of armed conflict, violence, disaster, detention, migration or other crises. Its purpose is to search for missing relatives, restore contact and, where possible, reunite separated families [8,9].

An additional operational tool within the Restoring Family Links framework is the *Trace the Face* platform, a virtual photo database managed by the ICRC and National Societies, used to reconnect families through images of missing persons. In the MDVI context, it may provide valuable antemortem facial and smile images, supporting the retrieval of visual identifiers and enabling preliminary forensic comparison.

RFL was created primarily to reconnect dispersed family members who are hopefully alive. In migrant routes, however, some missing persons may unfortunately be deceased. For this reason, RFL officers may become essential intermediaries for collecting photographs, nicknames, social media profiles, dental history, medical details, personal effects information and family contacts.

This is especially important because families of missing migrants may be more willing to share sensitive information with the Red Cross, NGOs or humanitarian actors than with police agencies. Fear of immigration consequences, criminalisation, distrust, language barriers or uncertain legal status may prevent relatives from approaching law enforcement.

The proposed innovation is the creation of structured synergy between RFL officers and forensic experts. RFL personnel could receive targeted training on which antemortem

information may be useful for MDVI, including smile photographs, previous dental treatment, orthodontic appliances, dental pain history, extractions, trauma, oral habits, prostheses and social media images.

Forensic odontologists, in turn, could provide multilingual checklists, image-quality guidance and protocols to help RFL teams collect relevant information without overburdening families and without requiring RFL officers to make forensic conclusions outside their competence.

ETHICAL AND OPERATIONAL SAFEGUARDS

The integration of social media profiles and dental data must be framed as a voluntary, ethical and humanitarian tool. Social media images cannot replace fingerprints, DNA or dental records. Their value lies in generating leads, excluding incompatible candidates, prioritising further comparisons and supporting the reconstruction of missing-person networks. Any use of such data must comply with principles of consent, transparency, data minimisation, confidentiality, restricted access and purpose limitation.

Forensic odontologists should remain responsible for the interpretation of dental features. RFL officers, NGOs and border personnel may assist in collecting information, but the forensic assessment of visible dental traits, comparison with postmortem findings and reporting of evidential value must remain within the competence of trained forensic experts. Standardised terminology and Interpol-compatible recording would also improve communication between local authorities, international organizations and forensic teams [10].



Figure 1: Fig. 1. Proposed workflow for integrating social media profiles and dental data in Migrant Disaster Victim Identification. RFL: Restoring Family Links.

CONCLUSIONS

Integrating social media profiles and dental data in MDVI can work if it is framed as a complementary humanitarian-forensic strategy. Social media handles voluntarily collected from arriving migrants may become future digital links to missing companions, relatives or friends.

Smile images and profile photographs may become secondary antemortem dental data. RFL officers may become key partners in collecting this information from families who would otherwise not approach police authorities.

The expected impact is not positive identification by social media alone, but a stronger antemortem search pathway. In cases of drowning, decomposition, fragmentation, burning or delayed recovery, where visual identification is unreliable and formal records are scarce, social media-derived dental information may help guide identification efforts. With specific training, shared protocols and forensic supervision, the integration of social media profiles, dental data and RFL networks could reduce the number of nameless migrant victims and restore identity, dignity and memory to those who died during the journey. Ultimately, this approach reinforces a

fundamental humanitarian principle: migrants should not die in the attempt to live.

REFERENCES:

- [1] Nuzzolese, E. (2012). Missing people, migrants, identification and human rights. *Journal of Forensic Odonto-Stomatology*, 30(Supplement 1), 47–59.
- [2] Nuzzolese, E., Lupariello, F., & Ricci, P. (2020). Human identification and human rights through humanitarian forensic odontology. *International Journal of Forensic Odontology*, 5(1), 38–42. https://doi.org/10.4103/ijfo.ijfo_5_20
- [3] Nuzzolese, E. (2022). Integration of dentistry and forensic odontology for a structured identification system and border control. *Forensic Sciences Research*, 7(1), 94–95. <https://doi.org/10.1080/20961790.2020.1842155>
- [4] Nuzzolese, E., AlQahtani, S. J., & Adserias, J. (2016). A biometric identification system and border control: A proposal for the integration of digital orthopantomograms (OPGs) and odontogram data of migrants. *Proceedings of the American Academy of Forensic Sciences*, 689.
- [5] Nuzzolese, E., Lupariello, F., & Di Vella, G. (2018). Selfie identification app as a forensic tool for missing and unidentified persons. *Journal of Forensic Dental Sciences*, 10(2), 75–78. https://doi.org/10.4103/jfo.jfds_80_17
- [6] Grégoir, H., Ravera, A., & Nuzzolese, E. (2022). Smile Selfie Image Analysis for Forensic Dental Identification: Protocol Proposal. *Egyptian Journal of Forensic Sciences*, 2026, in press.
- [7] Guerra Marti, R., Valsecchi, A., Ibáñez Panizo, O., Alemán, I., Benthous, S., Dellaia, D., & Nuzzolese, E. (2024). The potential of smile photographs and a PM intraoral scanner for dental identification. *Proceedings of the American Academy of Forensic Sciences*, 731.
- [8] International Committee of the Red Cross. (n.d.). *Restoring Family Links*. <https://familylinks.icrc.org/>
- [9] International Committee of the Red Cross. (n.d.). *Reconnecting families*. <https://www.icrc.org/en/what-we-do/reconnecting-families>
- [10] Nuzzolese, E. (2018). Dental autopsy for the identification of missing persons. *Journal of Forensic Dental Sciences*, 10(1), 50–54. https://doi.org/10.4103/jfo.jfds_33_17