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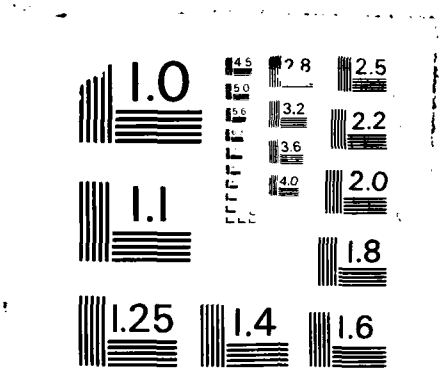

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COMBAT CASUALTIES AMONG U.S. NAVY PERSONNEL IN VIETNAM: 1965-1972

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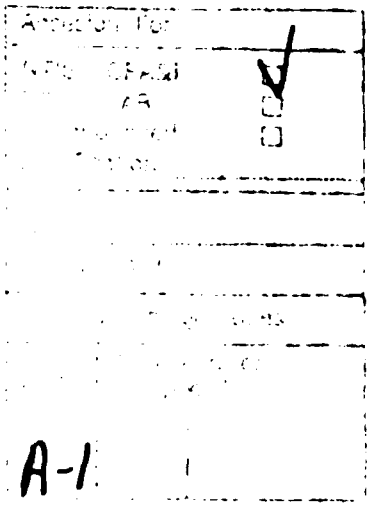

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SUMMARY

Problem

Despite the important contributions made by the U.S. Navy during the Vietnam war, very little is known about the combat casualties incurred by Navy personnel. Such information is particularly important in planning for medical treatment procedures and facilities which pertain to combat personnel in a military theater of operations.

Objective

The objective of this paper is to provide a descriptive account of four distinct aspects of combat casualties among Navy enlisted personnel in Vietnam between 1965 and 1972: (1) types of personnel injured in battle; (2) types of injuries; (3) wounding agents; and (4) the flow of patients into and from medical facilities in Vietnam.

Approach

Naval Health Research Center files were searched for all hospital admissions which were identified as a battle wound or injury. Combat casualties were defined as those hospitalizations with an ICDA-8 diagnosis of accidents, poisonings, and violence and a cause code of battle wound or injury. Diagnoses were grouped into categories of injuries such as fractures, contusions, burns, open wounds of the head, trunk, upper and lower limbs, and multiple open wounds. Age, sex, paygrade, length of service, race, rate, unit identification code, wounding agent, reporting facility, type of admission, and patient disposition upon discharge also were identified.

Results

The Enlisted Medical History File contains the records of 2,636 sailors who were wounded or injured in hostile action in Vietnam during the period between 1965 and 1972. Altogether, these individuals accounted for 7,419 battle-related first hospitalizations with one or more diagnoses of accidents, poisonings, and violence. Almost one half (45.6%) of the sailors wounded in Vietnam were medical corpsmen and most were 24 years of age or younger (82.8%). Rockets and bombs, mortars and bazookas, shell fragments, mines and booby traps, and bullets accounted for over 80% of the wounds and injuries. Three-fourths of the casualties were treated at a Naval hospital, hospital ship, or the Naval Support Activity at Da Nang. More than half of these admissions were direct from the battlefield while the remainder were

transfers from other medical facilities. The mortality rate of wounded patients was much lower than has been reported for Army and Marine Corps casualties in Vietnam or casualties in previous conflicts.

Conclusions

The descriptive data presented in this report reflect the demands placed on both medical personnel and medical facilities in a military theater of operations and present a picture of the characteristics of wounded personnel and the types of wounds which may be expected from certain types of weapons.

Recommendations

Although combat scenarios such as the ones encountered in Vietnam by the U.S. Navy may rarely be repeated, an understanding of the etiology, patient flow, and disposition of combat-related wounds and injuries could be useful in combat casualty care planning and management and could aid in the development of a medical information system specifically designed for combat casualty care.

Combat Casualties Among U.S. Navy Personnel in Vietnam: 1965-1972

Naval forces were involved in several important operations (1-2) during the Vietnam conflict. Between March 1965 and November 1968, planes from the carriers of the U.S. Seventh Fleet conducted bombing runs on industrial, military, and transportation targets in North Vietnam and provided air support for U.S. Marine units operating in the South. The Service Force of the Pacific Fleet replenished the surface warships operating off the coast of Vietnam as well as offloaded supplies at port facilities such as Da Nang. Destroyers, cruisers and the battleship U.S.S. New Jersey supported allied ground forces with naval gunfire. The Coastal Surveillance Force included radar picket ships, swift boats, Coast Guard patrol boats, cutters, minesweepers, and large patrol aircraft. These forces conducted patrols of a 1,000 mile coastline, boarding and searching coastal water traffic. River Operations were conducted by two U.S. Navy units with helicopter gunships, monitors, and small, fast patrol boats. These units patrolled rivers and deltas to stop enemy water traffic, conducted minesweeping operations in the Mekong Delta between Saigon and the ocean, and provided support in amphibious operations.

The U.S. Navy also provided critical support for Fleet Marine Force Units in Vietnam. Navy construction battalions built roads, airfields, and base camps for Marine Corps units. Two amphibious ready groups landed Marines in amphibious operations along the coast. Finally, the Navy provided medical support to the Fleet Marine Force. Medical care for Marine units in the field was provided by Navy hospital corpsmen. Wounded Marines were transported to the medical facilities of the Naval Support Activity in Da Nang or evacuated to the two U.S. Navy hospital ships, the Sanctuary and the Repose, stationed off the coast.

In the course of these operations, U.S. Navy personnel were killed or wounded-in-action in Vietnam. However, while studies have been conducted of combat-related wounds and injuries among Army (3-11) and Marine Corps (12-14) personnel in Vietnam, almost nothing is known of the epidemiology of combat casualties among Navy personnel. A study by Hoeffler and Melton (15) examined the distribution of Navy and Marine casualties and non-combat related hospital admission rates during the Vietnam conflict; however, data on Navy personnel alone were not provided.

An understanding of the risk factors for combat-related casualties is important for several reasons. The conditions under which the U.S. Navy performed its mission in Vietnam may never be repeated. Nevertheless, the information on casualties in Vietnam may provide information useful in the planning and management of combat casualty care resources in other contexts (3). An evaluation of the causes, victims, and environmental context of combat casualties may also provide the basis for procedures and policies which could result in a decline in the incidence of these conditions in a future military conflict (16). Efforts to provide improved medical care during military conflicts through the development of medical information systems specifically tailored to the needs of combat casualty care would also benefit from an understanding of the circumstances, wounding agents, and outcome of combat-related wounds and injuries (17).

This paper provides a description of four aspects of combat casualties among Navy enlisted personnel in Vietnam between 1965 and 1972: (1) personnel injured in battle; (2) types of wounds; (3) wounding agents; and (4) the flow of patients to and from medical facilities in Vietnam.

METHODS

The Naval Health Research Center maintains a computerized Inpatient Medical Data File which contains all hospitalizations for active duty U.S. Navy enlisted personnel. This file was searched for the period 1 July 1965 to 31 December 1972 for all first hospital admissions which had a diagnosis of accidents, poisonings, and violence, and a cause code of battle wound or injury. Diagnoses were classified in accordance with the International Classification of Disease Adapted for Use in the United States, Eighth Revision, (ICDA-8) (18) (Codes 800.0-999.9). Cause codes specify the cause of trauma (battle wound or injury, intentionally inflicted nonbattle injury, and accidental injury) for accidents, poisonings, and violence. Age, sex, paygrade, length of service, race, rate, and unit identification code of casualties were also identified from the file. As only a small number of female Navy personnel were present in Vietnam during this period, only males were considered in this study.

For analyses, diagnoses were grouped into categories of injuries such as fractures, contusions, open wounds of the head, and multiple open wounds. Navy occupations were grouped into major categories such as blue collar,

electronic-technical, administrative-clerical, apprentice, and medical (see Appendix). Unit identification codes also were grouped to better define duty stations at the time of injury. Age, paygrade, and length of service were grouped for statistical analyses.

Comparisons of primary diagnostic categories among age, paygrade, and occupational groups were made, and chi square tests were used to determine if differences were statistically significant (19). Calculation of injury rates and the assessment of risk, however, was not possible because of the lack of population data on U.S. Navy personnel who were at risk for combat casualties.

Also identified from this inpatient file was information pertaining to the wounding agent and the flow of patients to and from medical facilities. Each diagnosis contains a cause code indicating whether the injury was due to bullets, mines, grenades, artillery shells, and so on. Wounding agents were grouped for statistical analyses and cross-tabulated with categories of primary diagnoses. In addition, each patient record indicated whether the admission was directly from the battlefield or a transfer from another medical facility, the type of medical facility reporting the casualty, and the destination of the patient after leaving the reporting facility.

RESULTS

Characteristics of Casualties

The Inpatient Medical Data File for the study period contains the records of 2,636 sailors who were wounded or injured in combat in Vietnam (Table 1). Most of the casualty victims were under the age of 25 (82.8%), and were white (96%). Nearly one half of the casualties were medical personnel (hospital corpsmen) (45.4%). Navy men assigned to Marine Corps units accounted for 41.5% of the casualties.

Casualties reached a peak in 1968, the year of the TET offensive.

Types of Injuries

Table 2 provides a description of the types of injuries and diagnostic priority. Fractures accounted for the largest percentage of injuries, followed by multiple open wounds, contusions, and open wounds of the lower limbs.

In looking at primary diagnoses alone, open wounds accounted for a large percentage of injuries. Contusions and other diagnoses of accidents,

poisonings, and violence were not often the primary diagnosis on first admission of a casualty to a medical treatment facility.

Primary diagnoses by age are provided in Table 3. Casualties who were 25 years of age and older appeared to have had a higher percentage of fractures and strains and sprains than casualties who were younger than 25. There also was a slight percentage increase with respect to age for open head wounds. These differences were not statistically significant, however.

Diagnostic group by paygrade is provided in Table 4. The distribution of diagnoses among the three groups were found to be statistically significantly different ($p < .05$). Senior enlisted personnel displayed the highest percentages of fractures, strains and sprains and open head wounds among the three groups but the lowest percentage of open wounds of the lower limbs. Recruits, apprentices, and nonrated personnel (E1-E3) displayed the highest percentges of contusions and open wounds of the upper and lower limbs. There also were slight percentage increases with respect to paygrade for fractures and burns.

Primary diagnoses by occupational groups is provided in Table 5. Occupational groups appeared to differ with respect to the distribution of diagnoses ($p < .001$). Medical personnel had the lowest percentages of burns (0.9%) and amputations (1.3%) but the highest percentages of multiple open wounds (26.8%) and open wounds of lower (20.5%) and upper (14.7%) limbs.

Wounding Agent

Table 6 provides a list of wounding agents responsible for each of the diagnostic categories of primary battle casualty diagnoses. As the last column of the table indicates, bullets, shell fragments/unspecified, and mines and booby traps accounted for the largest percentage of casualties. Bullets also were responsible for the largest percentages of fractures, contusions, open wounds of the trunk, open wounds of the lower limbs, and open wounds of the upper limbs. Shell fragments/unspecified were responsible for large percentages of open wounds of the upper and lower limbs, multiple open wounds, and all other injuries. Fires and explosions on ships, aircraft, or on land which were secondary or indirect effects of the instrumentalities of war were responsible for large percentages of strains and sprains and burns.

Patient Flow

As indicated in Table 7, over 60 percent of the combat casualties recorded were treated at a Naval hospital or hospital ship. Marine battalion aid stations and field hospitals accounted for the second largest percentage of casualties treated, followed by the Naval Support Activity in Da Nang. More than half of these first admissions were direct from the battlefield while the remainder consist of transfers from other medical facilities. These data, however, reflect the lack of records for early treatment of casualties. Moreover, there is no indication that sailors treated and discharged from medical facilities of other branches of the military are included in these data. Of those treated for battle injuries who are in the file, about 89 percent were discharged from the reporting facility while 0.3 percent of those admitted died as a result of their wounds (DOW) at that facility. The remainder were transferred to other medical facilities in the United States, Clark Air Force Base in the Philippines, or other service facilities in the Pacific area.

DISCUSSION

Most of the Navy enlisted men wounded in Vietnam were young (under the age of 25), junior enlisted (E4s and below) medical or construction battalion personnel with four years or less in the service. Enlisted Navy men assigned to Marine Corps or other land-based units accounted for most of the casualties. Multiple open wounds or wounds of the upper and lower limbs were the most common primary diagnosis. Fractures and contusions were also common but typically not the primary injury of a battle casualty. No significant differences in the distribution of diagnoses were observed with respect to age; slight differences were observed with respect to paygrade; and significant differences were observed with respect to occupation.

The results of this study may be compared with a previous study of Marine Corps personnel wounded-in-action in Vietnam (13). Navy personnel wounded in Vietnam appear to have been slightly older and in the service for a slightly longer period of time than their Marine counterparts. There are also a smaller percentage of minorities among the Navy wounded (13.7% of the Marine Corps casualties were nonwhite).

The Navy casualties exhibited a higher percentage of fractures and strains and sprains than Marine casualties but a slightly lower percentage of multiple open wounds. The highly significant differences in the distribution

of primary diagnoses by age, paygrade, and occupation exhibited among the Marine casualties were less apparent among the Navy casualties. This may be because the Marine Corps sample included officers and a wider range of occupational specialties than the Navy sample, which included only enlisted men.

The distribution of primary diagnosis by wounding agent among the two groups is similar with some exceptions. Rockets, bombs, and the category of all other agents accounted for higher percentages of each diagnostic group as well as total diagnoses among the Navy casualties. In contrast, a larger percentage of the Marine casualties were due to mines and booby traps.

Finally, more Navy casualties (89.4%) were discharged and returned to duty than were Marine casualties (44.9%). The latter group appears to have been more likely to have been evacuated to other medical facilities throughout the Pacific or the United States for further treatment. Marines also had a higher percentage of treated casualties who died of wounds (1.4%) than did the Navy (0.3%).

The higher percentage of discharged casualties and the lower percentage of casualties who died from wounds may reflect one or both of two possibilities. The first possibility is that the Navy personnel had less serious wounds and injuries than the Marine Corps casualties. The smaller percentage of multiple wounds and injuries among Navy casualties would appear to support this hypothesis. Using data from World War II and Korea, Bellamy (3) reported that there was a 50% probability of being killed in action by multiple wounds. However, Navy casualties also displayed higher percentages of head and chest (within the category of Open Wounds of Trunk) wounds which were associated with increased risk of mortality in Vietnam (6,9,18).

The second possibility is that Navy personnel were closer to the higher echelons of medical care at the time of their injury and thus were provided with better and more immediate treatment than wounded Marines. The extensive use of helicopters for medical evacuations and the speed at which wounded Marines were transported to the Naval Support Activity in Da Nang would tend to argue against this possibility. However, further research is required to identify the salient factors responsible for the more favorable treatment outcomes among Navy casualties in contrast to their Marine counterparts.

Use of the results of this study, however, must take into account the limitations of the data. The data in this study include records of all

inpatient hospitalizations among enlisted Navy personnel from 1 July 1965 until the end of the Vietnam era. However, it may provide an incomplete count of Navy personnel who were wounded-in-action in Vietnam for a number of reasons. Personnel who were treated on an outpatient basis and then returned to duty were not included in this study. Records of minor injuries attributed to combat were unavailable for analysis. However, Carey (20) points out that while the inclusion of minor wounds may be statistically "correct" and may give a truer picture of the entire spectrum of wound types incurred in battle, inclusion of thousands of individuals with minor wounds may distort the true picture of the seriousness of wounding in battle and make it difficult to evaluate the medical care of major, life-threatening wounds. Further, this study does not include Navy personnel who died of wounds prior to receiving any form of medical care. However, as emphasized by Bizik and Bellamy (21), medical realities would seem to dictate that any inferences regarding quality of combat medical care of the wounded should be based solely on data from treated patients.

It must also be kept in mind that the data provided in this study are descriptive in nature. Efforts to analyze the rates of combat-related wounds and injuries among all Navy personnel are constrained by the lack of data on the population of U.S. Navy personnel who were at risk for these injuries. While information is available for the Navy as a whole, further research is required to identify the demographic and service-related characteristics of Navy personnel who actually served in Vietnam.

Despite these limitations, this paper provides an indication of the types of injuries incurred by naval forces in a specific combat scenario, their causes, and their disposition. Such information can be incorporated in the planning and management of combat casualty care in future conflicts, provide the foundation for more detailed epidemiologic investigations, and aid in the development of a medical information system designed specifically for combat scenarios.

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Table 1

Casualties by Demographic Characteristics
U.S. Navy in Vietnam, 1965-1972

Age	N	%
17-19	299	11.3
20	598	22.7
21	582	22.1
22	394	14.9
23-24	311	11.8
25-29	235	8.9
> 30 and older	217	8.2
Total	2,636	99.9[a]
Race		
Caucasian	2,536	96.2
Black	84	3.2
All Other	16	.6
Total	2,636	100.0
Paygrade		
E1-E3	1,045	39.6
E4	1,007	38.2
E5	349	13.2
E6-E9	224	8.5
Unknown	11	.4
Total	2,636	99.9[a]
Years Served		
0 - 1.9	237	9.0
2.0 - 2.9	902	34.2
3.0 - 3.9	681	25.8
4.0 - 4.9	334	12.7
5.0 - 9.9	256	9.7
10 +	226	8.6
Total	2,636	100.0

[a]Due to rounding, some percentages may not total 100.0%.

Table 1 (Cont'd)

Military Occupation		
Medical	1,201	45.6
Blue Collar	749	28.4
Apprentice	391	14.8
Elect-Tech	184	7.0
Admin-Cleric	81	3.1
Other	2	.1
Unknown	28	1.1
Total	2,636	100.1[a]
Year Hospitalized		
1965	114	4.3
1966	272	10.3
1967	583	22.1
1968	781	29.6
1969	542	20.6
1970	245	9.3
1971	70	2.7
1972	29	1.1
Total	2,636	100.0
Military Units		
First, Third, Ninth Marines	1,094	41.5
Land Support	489	18.6
Riverine Forces and Coastal Surveillance	402	15.3
Other Units	333	12.6
Support and Attack Ships	191	7.2
Unknown	127	4.8
Total	2,636	100.0

[a]Due to rounding, some percentages may not total 100.0%.

Table 2

Combat Casualties by Diagnostic Priority and Diagnostic Group[a]

U.S. Navy in Vietnam, 1965-1972

Diagnostic Group	Primary		Secondary		Other		Total Diagnoses	
	N	%	N	%	N	%	N	%
Open Wounds								
Multiple Sites	641	24.3	241	14.8	638	20.2	1,520	20.5
Lower Limb	502	19.0	226	13.9	343	10.8	1,071	14.4
Upper Limb	314	12.0	131	8.1	258	8.2	703	9.5
Head	170	6.4	100	6.2	202	6.4	472	6.4
Trunk	136	5.2	65	4.0	104	3.3	305	4.1
All	1,763	66.9	763	47.0	1,545	48.9	4,071	54.9
Fractures	424	16.1	445	27.4	750	23.7	1,619	21.8
Contusions	202	7.7	287	17.7	628	19.9	1,117	15.1
Strains, Sprains	81	3.1	24	1.5	53	1.7	158	2.1
Amputations	72	2.7	27	1.7	49	1.5	148	2.0
Burns	56	2.1	26	1.6	47	1.5	129	1.7
All Other Wounds and Injuries	38	1.4	51	3.1	88	2.8	177	2.4
	873	33.1	860	53.0	1,615	51.1	3,348	45.1
Total	2,636	100.0	1,623	100.0	3,160	100.0	7,419	100.0

[a]These figures reflect the first hospitalization for a battle-related wound or injury and not total hospital admissions although one individual may have more than one battle-related diagnosis.

Table 3

Combat Casualties by Age and Primary Diagnoses
U.S. Navy in Vietnam, 1965–1972

Diagnostic Group	Age Group 17–19		20–24		25+	
	N	%	N	%	N	%
Open Wounds						
Multiple Sites	58	19.4	465	24.7	118	26.1
Lower Limb	61	20.4	364	19.3	77	17.0
Upper Limb	48	16.1	221	11.7	45	10.0
Head	14	4.7	131	6.9	25	5.5
Trunk	16	5.4	99	5.3	21	4.6
All	197	66.0	1,280	67.9	286	63.2
Fractures	44	14.7	303	16.1	77	17.0
Contusions	28	9.4	141	7.5	33	7.3
Strains, Sprains	8	2.7	51	2.7	22	4.9
Amputations	6	2.0	49	2.6	17	3.8
Burns	10	3.3	35	1.9	11	2.4
All Other Wounds and Injuries	6	2.0	26	1.4	6	1.3
	102	34.1	605	32.2	166	36.7
Total N = 2,636	299	100.1[a]	1,885	100.1[a]	452	99.9[a]

x^2 = ns

[a]Due to rounding, some percentages may not total 100.0%.

Table 4

Combat Casualties by Paygrade and Primary Diagnoses
U.S. Navy in Vietnam, 1965-1972

Diagnostic Group	E1 - E3		E4		E5 - E9	
	N	%	N	%	N	%
Open Wounds						
Multiple Sites	229	21.9	263	26.1	146	25.5
Lower Limb	211	20.2	202	20.1	87	15.2
Upper Limb	140	13.4	121	12.0	52	9.1
Head	58	5.6	65	6.5	47	8.2
Trunk	48	4.6	55	5.5	33	5.8
All	686	65.7	706	70.0	365	63.8
Fractures	163	15.6	154	15.3	105	18.3
Contusions	97	9.3	69	6.9	35	6.1
Strains, Sprains	34	3.3	24	2.4	21	3.7
Amputations	31	3.0	20	2.0	21	3.7
Burns	19	1.8	18	1.8	19	3.3
All Other Wounds and Injuries	15	1.4	16	1.6	7	1.2
	359	34.4	301	30.0	208	36.3
Total N = 2,625	1,045	100.1[a]	1,007	100.0	573	100.1[a]
Missing N = 11						

x^2=41.09 d.f.=20 p<.05

(a) Due to rounding, some percentages may not total 100.0%.

Table 5

Combat Casualties by Grouped Occupation[a] and Primary Diagnosis
U.S. Navy in Vietnam, 1965–1972

Diagnostic Group	Blue Collar N = 749 %	Electronic/ Technical N = 184 %	Administrative/ Clerical N = 81 %	Apprentice N = 391 %	Medical N = 1201 %
Open Wounds					
Multiple Sites	23.9	25.0	18.5	18.7	26.8
Lower Limb	18.0	15.8	16.0	18.7	20.5
Upper Limb	8.0	10.3	4.9	13.3	14.7
Head	8.3	9.2	9.9	6.4	4.7
Trunk	4.5	3.3	7.4	5.4	5.2
All	62.7	63.6	56.7	62.5	71.9
Fractures	17.1	14.1	19.8	15.3	16.1
Contusions	7.1	8.2	7.4	10.7	6.9
Strains, Sprains	3.9	5.4	6.2	4.1	1.5
Amputations	4.1	3.8	3.7	3.6	1.3
Burns	3.3	3.8	3.7	2.6	.9
All Other Wounds and Injuries	1.7	1.1	2.5	1.3	1.3
	37.2	36.4	43.3	37.6	28.0
Total (N = 2,606)	99.9[b]	100.0	100.0	100.1[b]	99.9[b]
Missing (N = 30)	x^2=111.73	df=40	p<.001		

[a]See Appendix.

[b]Due to rounding, some percentages may not total 100.0%.

Table 6

Combat Casualties by Wounding Agent, U.S. Navy in Vietnam, 1965–1972

Wounding Agent	Primary Diagnosis: Fractures %	Sprains Strains %	Contusions %	Open Wound Head %	Open Wound Trunk %	Open Wound Upper Limbs %
Bullets	40.1	4.9	28.7	15.9	51.5	46.8
Shell Fragments/Unspecified	9.9	4.9	10.4	14.7	11.8	13.4
Mines/Booby Traps	15.8	8.6	13.9	15.3	5.9	7.3
Rockets/Bombs	6.8	6.2	17.8	22.9	2.2	8.6
Mortars/Bazookas	10.8	9.9	9.4	8.2	15.4	9.9
Grenades	4.2	2.5	7.9	12.9	3.7	4.5
All Other Agents	8.0	23.5	6.9	5.3	6.6	6.4
Fires/Explosions	2.8	30.9	4.5	1.8	0	1.0
Artillery	1.4	8.6	0	1.8	2.2	1.6
Bayonets	0	0	.5	0	.7	.6
Incendiary/Flame Throwers	0	0	0	1.2	0	0
All combined	99.8[a]	100.0	100.0	100.0	100.0	100.1[a]

Wounding Agent	Open Wound Lower Limbs %	Multiple Open Wounds %	Burns %	Amputations %	All Other APV %	Total Casualty Diagnoses %	N
Bullets	48.4	16.7	5.5	18.1	21.1	32.3	850
Shell Fragments/Unspecified	15.3	21.2	3.6	13.9	39.5	14.8	390
Mines/Booby Traps	11.2	18.9	20.0	13.9	13.2	13.7	362
Rockets/Bombs	8.8	15.9	20.0	20.8	2.6	11.8	312
Mortars/Bazookas	7.6	15.1	3.6	4.2	7.9	10.7	282
Grenades	4.0	7.2	7.3	12.5	2.6	6.0	157
All Other Agents	3.4	2.7	16.4	9.7	2.6	5.9	156
Fires/Explosions	1.2	.5	21.8	4.2	10.5	3.0	80
Artillery	.2	1.4	0	2.8	0	1.4	36
Bayonets	0	.2	0	0	0	.2	5
Incendiary/Flame Throwers	0	.3	1.8	0	0	.2	5
All Combined	100.1[a]	100.0	100.0	100.1[a]	100.0	100.0	2,635

[a]Due to rounding, some percentages may not total 100.0%.

Table 7

Treatment Facilities, Type of Admission, and Disposition of U.S. Navy Combat Casualties in Vietnam, 1965–1972

Treatment Facility	N	%
Naval Hospital/Hospital Ship	1,651	62.6
Marine Groups	431	16.4
Naval Support Activity, DaNang	376	14.3
All Other Facilities/and unknown	132	5.0
Helicopter Ships	46	1.7
Total	2,636	100.0
Type Admission		
Direct	1,432	54.3
Transfer from Facility	1,204	45.7
Total	2,636	100.0
Disposition		
Discharge from Hospital	2,356	89.4
Transfer to VA Facility	120	4.5
Evacuation to CONUS	107	4.1
Transfer to Navy Facility	21	.8
Transfer to Army Facility	12	.5
Transfer to Air Force Facility	11	.4
Died	9	.3
Total	2,636	100.0

APPENDIX

Occupational Groups of Navy Occupational Ratings[a]

Code		Job Title
1. APPRENTICE/RECRUIT		
3600	SN	Seaman
5000	FN	Fireman
6000	CN	Construction Man
7800	AN	Airman
2. BLUE COLLAR		
0100	BM	Boatswain's Mate
0500	TM	Torpedoman's Mate
0600	GM	Gunner's Mate
0604	GMG	Gunner's Mate Guns
3700	MM	Machinist's Mate
3800	EN	Engineman
3900	MR	Machinery Repairman
4000	BT	Boiler Technician
4100	EM	Electrician's Mate
4300	HT	Hull Maintenance Technician
5100	EA	Engineering Aid
5300	CE	Construction Electrician
5410	EO	Equipment Operator
5500	CM	Construction Mechanic
5600	BU	Builder
5700	UT	Utilitiesman
6200	AD	Aviation Machinist's Mate
6500	AO	Aviation Ordnanceman
6520	AQ	Aviation Fire Control Technician
6700	AB	Aviation Boatswain's Mate
6800	AE	Aviation Electrician's Mate
6900	AM	Aviation Structural Mechanic
7000	PR	Aircrew Survival Equipmentman
7400	AZ	Aviation Maintenance Admin Man
7500	AS	Aviation Support Equipment Technician
3. ADMINISTRATIVE/CLERICAL		
0200	QM	Quartermaster
1700	YN	Yeoman
1800	PN	Personnelman
1900	DP	Data Processing Technician
2000	SK	Storekeeper
2100	DK	Disbursing Clerk
2200	MS	Mess Management Specialist
2290	CS	Commissary Man
2490	SH	Ship's Serviceman

APPENDIX (Cont'd)

2700 PC Postal Clerk
3200 DM Illustrator Draftsman
7300 AK Aviation Storekeeper

4. ELECTRONIC/TECHNICAL

0250 SM Signalman
0300 OS Operations Specialist
0400 ST Sonar Technician
0401 STG Sonar Technician Surface
0800 FT Fire Control Technician
1000 ET Electronics Technician
1100 IM Instrumentman
1500 RM Radioman
1600 CT Communications Technician
6300 AT Aviation Electronics Technician
6400 AW Aviation ASW Operator
6600 AC Air Controlman
7100 AG Aerographer's Mate
7200 TD Tradevman
7700 PT Photographic Intelligenceman

5. MEDICAL

8000 HN Hospital Corpsman
8300 DN Dentalman

[a]Only those occupational ratings reported by Navy personnel with a combat-related wound or injury were included in this list.

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19 ABSTRACT (Continue on reverse if necessary and identify by block number)
This paper provides a descriptive account of combat casualties among Navy enlisted personnel in Vietnam between 1965 and 1972. The Enlisted Medical History File was searched for all hospital admissions which were identified as a battle-related wound or injury. The records of 2,636 sailors who were wounded or injured in Vietnam were identified. These individuals accounted for 7,419 battle-related first hospitalizations with one or more diagnoses of accidents, poisonings, and violence. Most of the wounded sailors were young (under the age of 25), and almost one half were medical corpsmen. Rockets and bombs, mortars and bazookas, shell fragments, mines and booby traps, and bullets accounted for over 80% of the wounds and injuries. Most casualties were treated at a Naval hospital, hospital ship, or the Naval Support Activity at Da Nang. More than half of these admissions were direct from the battlefield while the remainder were transfers from other medical facilities. The mortality rate of wounded patients was much lower than has been reported for Army and Marine Corps casualties in Vietnam or casualties in previous conflicts.

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